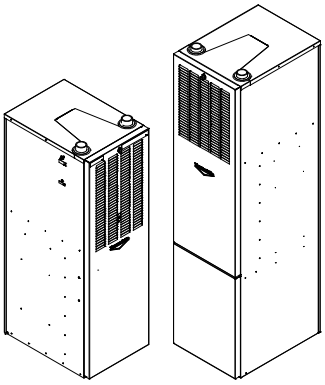
GAS FIRED HIGH EFFICIENCY FURNACE
DOWNFLOW & DIRECT VENT (SEALED COMBUSTION)



MODELS:
CMA3-50D36N, CMA3-75D36N,
CMC1-50D36N, CMC1-75D36N,
CMC1-50DV3N, CMC1-75DV3N
INSTALLATION AND SERVICE MANUAL

For installation in:

1. Manufactured Homes
2. Modular Homes/Buildings
3. Site Constructed—Residential (Single Story Dwellings)

⚠WARNING

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

⚠**WARNING:** ***If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.***

⚠**WARNING:** ***Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, or fuel supplier.***

⚠**WARNING:** ***Do not use this appliance if any part has been underwater. Immediately call a qualified service technician to inspect the appliance and to replace any part of the electrical or control system that has been underwater.***

PLEASE READ THESE INSTRUCTIONS PRIOR TO INSTALLATION, INITIAL FIRING, AND BEFORE PERFORMING ANY SERVICE OR MAINTENANCE. THESE INSTRUCTIONS MUST BE LEFT WITH THE USER AND SHOULD BE RETAINED FOR FUTURE REFERENCE BY QUALIFIED SERVICE PERSONNEL.

AHRI CERTIFIED® www.ahridirectory.org

THERMO PRODUCTS, LLC.
POST OFFICE BOX 217
NORTH JUDSON, IN 46366
PHONE: (574) 896-2133

C ETL US LISTED Intertek

MG-517
ECN 5396-MA 141211

MADE IN USA

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REFERENCED PUBLICATIONS:
NATIONAL FUEL GAS CODE
NFPA 54/ANSI-Z233.1
(LATEST EDITION)

FOR COPIES CONTACT:
NATIONAL FIRE PROTECTION ASSOCIATION
1 BATTERYMARCH PARK
P.O. BOX 9101
QUINCY, MA 02269-9101

All installations and services must be performed by qualified service personnel.

I. SAFETY INFORMATION

This and the following page contain reproductions of the various warning and instruction labels placed on the Thermo Pride Condensing Gas Furnaces. Please read and comply with the contents of these labels.

CAUTION

MOVING PARTS.
CAN CAUSE SEVERE PERSONAL INJURY.

SHUT OFF FURNACE BEFORE REMOVING THIS PANEL.

FILTER MAINTENANCE: WHEN IT BECOMES NECESSARY TO REPLACE OR WASH FILTER REMOVE THE DIRTY FILTER FROM THE RACKS PROVIDED AND WASH OR REPLACE WITH IDENTICAL NEW FILTERS.

DO NOT REMOVE THIS LABEL

⚠WARNING

SPECIAL HOMEOWNERS INSTRUCTIONS

- **IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.**
- **FOR SAFE OPERATION** IT IS THE RESPONSIBILITY OF THE OWNER AND/OR USER THAT THE BURNER, CHIMNEY/VENT PIPE, HEAT EXCHANGER AND CONTROLS SHOULD BE INSPECTED EVERY YEAR BY A QUALIFIED HEATING CONTRACTOR.
- THE OWNER AND/OR USER SHOULD ALSO CONDUCT PERIODIC VISUAL INSPECTIONS. REFER TO THE USERS INFORMATION MANUAL PROVIDED WITH THIS FURNACE FOR DETAILS.
- ANY DEFICIENCIES NOTED MUST BE CORRECTED AT ONCE BY A QUALIFIED HEATING CONTRACTOR. DO NOT ATTEMPT TO MAKE REPAIRS YOURSELF!
- FOR ASSISTANCE OR ADDITIONAL INFORMATION CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.

FOR YOUR SAFETY

WHAT TO DO IF YOU SMELL GAS:

1. **DO NOT TRY TO LIGHT ANY APPLIANCE.**
2. **DO NOT TOUCH ANY ELECTRICAL SWITCH; DO NOT USE ANY PHONE IN YOUR BUILDING.**
3. **IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBOR'S PHONE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.**
4. **IF YOU CANNOT REACH YOUR GAS SUPPLIER; CALL THE FIRE DEPARTMENT.**

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

THIS UNIT MUST BE INSTALLED AND SERVICED BY A QUALIFIED CONTRACTOR ONLY.

OPERATING INSTRUCTIONS ARE LOCATED INSIDE APPLIANCE NEAR BURNER ASSEMBLY.

AVERTISSEMENT

LES PIÈCES MOBILES PEUVENT BLESSER GRAVEMENT DES PERSONNES

ARRÊTER LA CHAUDIÈRE AVANT D'ENLEVER CE PANNEAU.

MAINTENANCE DES FILTRES : QUAND IL LE FAUT, RETIRER LES FILTRES ENCRASSÉS DE LEURS BOÎTIERS, LES LAVER OU LES REMPLACER PAR DES FILTRES NEUFS IDENTIQUES.

NE PAS ENLEVER CETTE ÉTIQUETTE

390553

⚠ ATTENTION

INSTRUCTIONS SPÉCIALES POUR LES PROPRIÉTAIRES

- **DE MAUVAISES INSTALLATIONS, MODIFICATIONS ET MAINTENANCES, DE MAUVAIS RÉGLAGES ET ENTRETIENS POURRAIENT ENDOMMAGER LA PROPRIÉTÉ, BLESSER OU TUER DES PERSONNES.**
- **POUR UN FONCTIONNEMENT EN TOUTE SÉCURITÉ** IL EST DE LA RESPONSABILITÉ DU PROPRIÉTAIRE ET/OU DE L'UTILISATEUR QUE LE BRÛLEUR, LE TUYAU DE L'ÉVENT OU DE LA CHEMINÉE, L'ÉCHANGEUR DE CHALEUR ET LES COMMANDES SOIENT INSPECTÉS CHAQUE ANNÉE PAR UN CHAUFFAGISTE QUALIFIÉ.
- LE PROPRIÉTAIRE ET/OU L'UTILISATEUR DOIVENT AUSSI EFFECTUER DES INSPECTIONS VISUELLES PÉRIODIQUES. POUR LES DÉTAILS, ILS DOIVENT CONSULTER LE MANUEL D'INSTRUCTIONS FOURNI AVEC LA CHAUDIÈRE.
- TOUTES LES DÉFICIENCES DOIVENT ÊTRE CORRIGÉES IMMÉDIATEMENT PAR UN CHAUFFAGISTE QUALIFIÉ. NE PAS ESSAYER DE RÉPARER SOI-MÊME!
- POUR TOUTE AIDE OU INFORMATIONS SUPPLÉMENTAIRES, CONSULTER UN CHAUFFAGISTE QUALIFIÉ, UNE ENTREPRISE DE SERVICE OU LE FOURNISSEUR DE GAZ.

POUR VOTRE SÉCURITÉ

QUOI FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ

1. **N'ALLUMEZ AUCUN APPAREIL.**
2. **NE TOUCHEZ AUCUN INTERRUPTEUR ÉLECTRIQUE. N'UTILISEZ AUCUN TÉLÉPHONE DU BÂTIMENT.**
3. **APPELEZ IMMÉDIATEMENT VOTRE FOURNISSEUR DE GAZ À PARTIR DU TÉLÉPHONE D'UN VOISIN. SUIVEZ LES DIRECTIVES DE VOTRE FOURNISSEUR.**
4. **SI VOUS NE POUVEZ PAS JOINDRE VOTRE FOURNISSEUR, APPELEZ LES POMPIERS.**

POUR VOTRE SÉCURITÉ

N'EMMAGASINEZ PAS OU N'UTILISEZ PAS D'ESSENCE NI D'AUTRES VAPEURS ET LIQUIDES INFLAMMABLES DANS LE VOISINAGE DE CET APPAREIL NI DE TOUT AUTRE.

CETTE UNITÉ NE DOIT ÊTRE INSTALLÉE ET ENTRETENUE QUE PAR UN CHAUFFAGISTE QUALIFIÉ.

LES INSTRUCTIONS DE FONCTIONNEMENT SONT SITUÉES DANS L'APPAREIL, PRÈS DU BRÛLEUR.

⚠WARNING

REINSTALL ALL PARTS!

Should this unit be disassembled all components, panels, block offs, collars, gaskets, and fasteners must be reassembled as originally factory produced.

Failure to do so may result in property damage, injury, or loss of life.

⚠AVERTISSEMENT

REMONTER TOUTES LES PIÈCES!

En cas de démontage de cet appareil, tous les composants, panneaux, obturations, colliers, joints et fixations doivent être remontés comme à l'origine.

Le non-respect de cette consigne pourrait causer des dommages matériels, des blessures ou même la mort.

390293

DIAGNOSTIC CODE VIEW PORT

Read code prior to removing door.

390541

OUTSIDE POWER SOURCE CONNECT 115v 60Hz TO L1 HOT AND L2 COMMON.

390229

⚠WARNING

Hazardous flue gas.

Can cause personal injury or loss of life.

Inspect rubber hose connecting inducer outlet to PVC tee and all vent system joints for leak free connections befor furnace operation.

⚠ATTENTION

Gaz de combustion dangereux.

Peut blesser ou tuer des personnes.

Avant de démarrer la chaudière, inspecter le tuyau en caoutchouc reliant la boîte de sortie de l'évacuateur au T en PVC et tous les joints du système de ventilation pour éliminer les fuites aux raccords.

390556

⚠WARNING

This compartment must be closed except when servicing.

⚠AVERTISSEMENT

Ce compartiment doit être fermé sauf pendant l'entretien.

390290

KEEP CLOSED WHEN APPLIANCE IS IN OPERATION

DOIT ÊTRE FERMÉ QUAND L'APPAREIL FONCTIONNE

390554

NOTE: DO NOT ADD SEALANT TO THE PVC BURNER BOX INLET RING CONNECTION.
(REFER TO INSTALLATION INSTRUCTIONS)

L0-224

THIS FURNACE MUST BE INSTALLED SO THERE ARE PROVISIONS FOR VENTILATING AIR.

CETTE CHAUDIÈRE DOIT ÊTRE INSTALLÉE DE MANIÈRE À ASSURER UN AIR DE VENTILATION.

390555

All installations and services must be performed by qualified service personnel.

This and the previous page contain reproductions of the various safety and instruction labels placed on the Thermo Pride Condensing Gas Furnaces. Please read and comply with the contents of these labels.

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance does not have a pilot. It is equipped with a hot surface igniter that automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the base of unit because some gas is heavier than air and will settle on the floor or ground.
WHAT TO DO IF YOU SMELL GAS
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

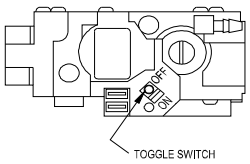
C. Use only your hand to move the gas control switch. Never use tools. If the switch will not move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been underwater. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been underwater.

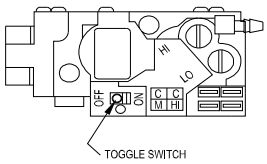
OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Set the thermostat to the lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with a hot surface igniter that automatically lights the burner. Do not try to light the burner by hand.
5. Move the gas control switch to the "OFF" position.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor or ground. If you smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to the next step.
7. Move the gas control switch to the "ON" position.
8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting, and, if equipped, set the operating mode to "HEAT".
10. If appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

GAS CONTROL VALVE



GAS CONTROL VALVE 2-STAGE



TO TURN OFF GAS TO APPLIANCE

1. Set thermostat to lowest setting, and, if equipped, set the operating mode to "COOL" or "OFF".
2. If service is to be performed, turn off all electric power to the appliance.
3. To turn off gas control valve, remove the burner compartment cover.
4. Move the gas control switch to the "OFF" position.
5. Replace the burner compartment cover.

À LIRE, POUR VOTRE SÉCURITÉ, AVANT DE DÉMARRER LA CHAUDIÈRE

ATTENTION ! Si vous ne respectez pas exactement les instructions ci-dessous, un incendie ou une explosion pourraient endommager la propriété, blesser ou tuer des personnes.

A. Cet appareil n'a pas de veilleuse. Il comporte une surface d'allumage chaude qui allume automatiquement le brûleur. N'essayez pas d'allumer le brûleur manuellement.

B. AVANT DE DÉMARRER la chaudière, humez l'air autour de l'appareil pour détecter une éventuelle odeur de gaz. Humez aussi l'air près de la base de la chaudière puisque le gaz étant plus lourd que l'air, il pourrait s'accumuler près du sol ou du plancher.
QUOI FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ
- N'allumez aucun appareil.
- Ne touchez aucun interrupteur électrique; n'utilisez aucun téléphone dans l'immeuble.
- Appelez immédiatement votre fournisseur de gaz à partir du téléphone d'un voisin. Suivez ses instructions.
- Si vous ne pouvez pas joindre votre fournisseur de gaz, appelez les pompiers.

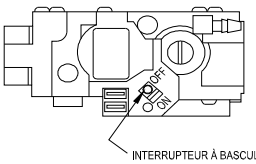
C. Manipulez l'interrupteur de commande de gaz seulement à la main. N'utilisez jamais des outils pour cela. Si vous ne pouvez pas manipuler cet interrupteur manuellement, n'essayez pas de le réparer, appelez un technicien de service qualifié. Forcer l'interrupteur ou tenter de le réparer, pourraient provoquer un incendie ou une explosion.

D. N'utilisez pas la chaudière si l'une de ses pièces a été sous de l'eau. Appelez immédiatement un technicien de service qualifié pour qu'il inspecte la chaudière et remplace toute pièce du système de commande et tout interrupteur de commande de gaz qui ont été sous de l'eau.

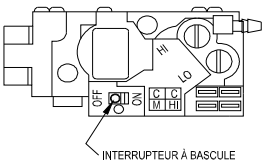
INSTRUCTIONS POUR LE FONCTIONNEMENT

1. STOP ! Lisez l'information sur la sécurité au haut de cette étiquette.
2. Réglez le thermostat à sa position la plus basse.
3. Coupez toute l'alimentation électrique la chaudière.
4. Cette chaudière est équipée d'une surface d'allumage chaude qui allume automatiquement le brûleur. N'essayez pas d'allumer le brûleur manuellement.
5. Placez l'interrupteur de commande de gaz à la position «OFF».
6. Attendez cinq (5) minutes pour que tout le gaz soit évacué. Humez l'air pour détecter une éventuelle odeur de gaz, sans oublier de l'humer aussi près du sol ou du plancher. Si vous sentez une odeur de gaz, STOP ! Suivez le point «B» de l'information sur la sécurité au haut de cette étiquette. Si vous ne sentez aucune odeur de gaz, passez à l'étape suivante.Move the gas control switch to the "ON" position.
7. Placez l'interrupteur de commande de gaz à la position «ON».
8. Appliquez toute l'alimentation électrique à la chaudière.
9. Réglez le thermostat à la position désirée et, le cas échéant, mettez le mode de fonctionnement à la position «HEAT».
10. Si la chaudière ne fonctionne pas, suivez les instructions de « POUR COUPER L'ALIMENTATION EN GAZ DE LA CHAUDIÈRE» et appelez votre technicien de service ou votre fournisseur de gaz.

VALVE DE COMMANDE DE GAZ



VALVE DE COMMANDE DE GAZ À DEUX ÉTAGES



POUR COUPER L'ALIMENTATION EN GAZ DE LA CHAUDIÈRE

1. Réglez le thermostat à sa position la plus basse et, le cas échéant, réglez le mode de fonctionnement à la position «COOL» ou «OFF».
2. S'il faut accomplir une certaine tâche, coupez toute alimentation en électricité de la chaudière.
3. Pour fermer la valve de commande de gaz, enlevez le couvercle du compartiment du brûleur.
4. Mettez l'interrupteur de commande de gaz à la position «OFF».
5. Replacez le couvercle du compartiment du brûleur.

390558

THIS FURNACE IS EQUIPPED FOR NATURAL GAS

This furnace is equipped with orifices sized for operation with natural gas. For conversion to propane gas see CONVERSION instructions label on the furnace. Orifices necessary for propane conversion are provided in the parts package located on the inside of this furnace.

Remove this label only after the furnace conversion has been made.

CETTE CHAUDIÈRE EST ÉQUIPÉE POUR LE GAZ NATUREL

Cette chaudière est munie des orifices dimensionnés pour un fonctionnement au gaz naturel. Pour la conversion au gaz propane, voir l'étiquette d'instructions CONVERSION posée sur la chaudière. Les orifices nécessaires pour la conversion au propane sont dans l'emballage de pièces détachées situé dans la chaudière.

Enlever cette étiquette seulement après la conversion de la chaudière.

390557

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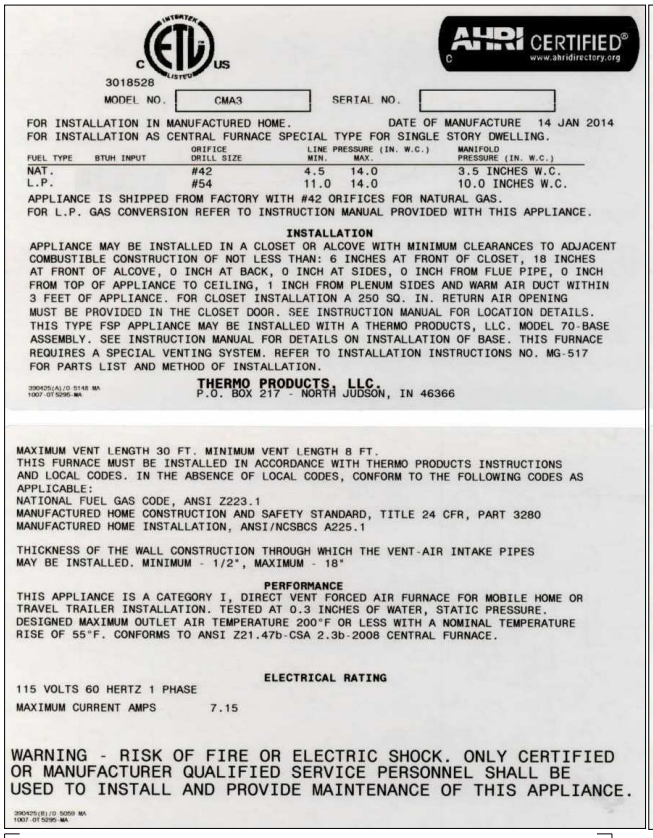


3018528

MODEL NO. CMA3 SERIAL NO.

FOR INSTALLATION IN MANUFACTURED HOME. DATE OF MANUFACTURE 14 JAN 2014
FOR INSTALLATION AS CENTRAL FURNACE SPECIAL TYPE FOR SINGLE STORY DWELLING.

FUEL TYPE	BTUH INPUT	ORIFICE DRILL SIZE	LINE PRESSURE (IN. W.C.) MIN.	MAX.	MANIFOLD PRESSURE (IN. W.C.)
NAT.		#42	4.5	14.0	3.5 INCHES W.C.
L.P.		#54	11.0	14.0	10.0 INCHES W.C.

APPLIANCE IS SHIPPED FROM FACTORY WITH #42 ORIFICES FOR NATURAL GAS.
FOR L.P. GAS CONVERSION REFER TO INSTRUCTION MANUAL PROVIDED WITH THIS APPLIANCE.

INSTALLATION

APPLIANCE MAY BE INSTALLED IN A CLOSET OR ALCOVE WITH MINIMUM CLEARANCES TO ADJACENT COMBUSTIBLE CONSTRUCTION OF NOT LESS THAN: 6 INCHES AT FRONT OF CLOSET, 18 INCHES AT FRONT OF ALCOVE, 0 INCH AT BACK, 0 INCH AT SIDES, 0 INCH FROM FLUE PIPE, 0 INCH FROM TOP OF APPLIANCE TO CEILING, 1 INCH FROM PLENUM SIDES AND WARM AIR DUCT WITHIN 3 FEET OF APPLIANCE. FOR CLOSET INSTALLATION A 250 SQ. IN. RETURN AIR OPENING MUST BE PROVIDED IN THE CLOSET DOOR. SEE INSTRUCTION MANUAL FOR LOCATION DETAILS. THIS TYPE FSP APPLIANCE MAY BE INSTALLED WITH A THERMO PRODUCTS, LLC. MODEL 70-BASE ASSEMBLY. SEE INSTRUCTION MANUAL FOR DETAILS ON INSTALLATION OF BASE. THIS FURNACE REQUIRES A SPECIAL VENTING SYSTEM. REFER TO INSTALLATION INSTRUCTIONS NO. MG-517 FOR PARTS LIST AND METHOD OF INSTALLATION.

390425(A)/0-5148 MA
1007-0T5295-MA

THERMO PRODUCTS, LLC.
P.O. BOX 217 - NORTH JUDSON, IN 46366

MAXIMUM VENT LENGTH 30 FT. MINIMUM VENT LENGTH 8 FT.
THIS FURNACE MUST BE INSTALLED IN ACCORDANCE WITH THERMO PRODUCTS INSTRUCTIONS AND LOCAL CODES. IN THE ABSENCE OF LOCAL CODES, CONFORM TO THE FOLLOWING CODES AS APPLICABLE:
NATIONAL FUEL GAS CODE, ANSI Z223.1
MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARD, TITLE 24 CFR, PART 3280
MANUFACTURED HOME INSTALLATION, ANSI/NCSBCS A225.1

THICKNESS OF THE WALL CONSTRUCTION THROUGH WHICH THE VENT-AIR INTAKE PIPES MAY BE INSTALLED. MINIMUM - 1/2", MAXIMUM - 18"

PERFORMANCE

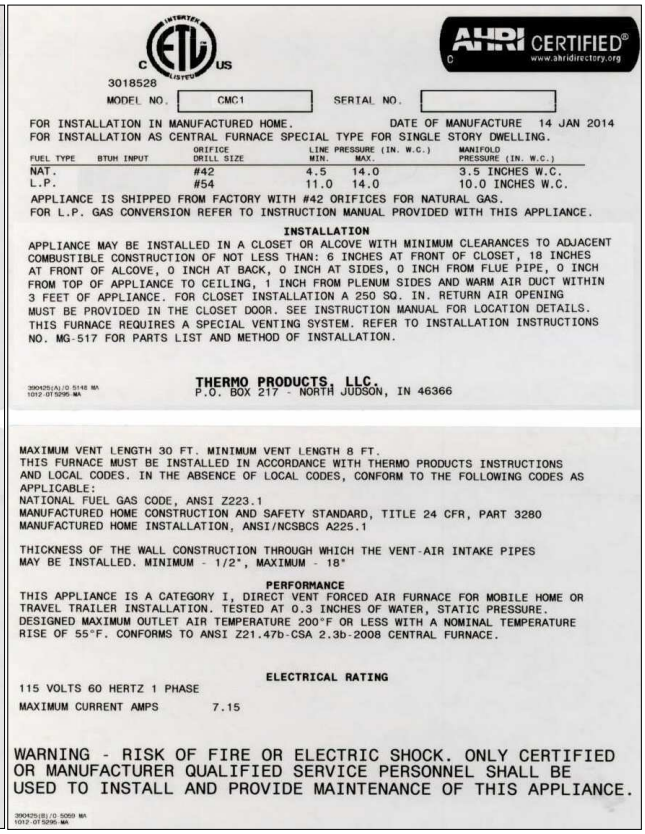
THIS APPLIANCE IS A CATEGORY I, DIRECT VENT FORCED AIR FURNACE FOR MOBILE HOME OR TRAVEL TRAILER INSTALLATION. TESTED AT 0.3 INCHES OF WATER, STATIC PRESSURE. DESIGNED MAXIMUM OUTLET AIR TEMPERATURE 200°F OR LESS WITH A NOMINAL TEMPERATURE RISE OF 55°F. CONFORMS TO ANSI Z21.47b-CSA 2.3b-2008 CENTRAL FURNACE.

ELECTRICAL RATING

115 VOLTS 60 HERTZ 1 PHASE
MAXIMUM CURRENT AMPS 7.15

WARNING - RISK OF FIRE OR ELECTRIC SHOCK. ONLY CERTIFIED OR MANUFACTURER QUALIFIED SERVICE PERSONNEL SHALL BE USED TO INSTALL AND PROVIDE MAINTENANCE OF THIS APPLIANCE.

390425(B)/0-5059 MA
1007-0T5295-MA



3018528

MODEL NO. CMC1 SERIAL NO.

FOR INSTALLATION IN MANUFACTURED HOME. DATE OF MANUFACTURE 14 JAN 2014
FOR INSTALLATION AS CENTRAL FURNACE SPECIAL TYPE FOR SINGLE STORY DWELLING.

FUEL TYPE	BTUH INPUT	ORIFICE DRILL SIZE	LINE PRESSURE (IN. W.C.) MIN.	MAX.	MANIFOLD PRESSURE (IN. W.C.)
NAT.		#42	4.5	14.0	3.5 INCHES W.C.
L.P.		#54	11.0	14.0	10.0 INCHES W.C.

APPLIANCE IS SHIPPED FROM FACTORY WITH #42 ORIFICES FOR NATURAL GAS.
FOR L.P. GAS CONVERSION REFER TO INSTRUCTION MANUAL PROVIDED WITH THIS APPLIANCE.

INSTALLATION

APPLIANCE MAY BE INSTALLED IN A CLOSET OR ALCOVE WITH MINIMUM CLEARANCES TO ADJACENT COMBUSTIBLE CONSTRUCTION OF NOT LESS THAN: 6 INCHES AT FRONT OF CLOSET, 18 INCHES AT FRONT OF ALCOVE, 0 INCH AT BACK, 0 INCH AT SIDES, 0 INCH FROM FLUE PIPE, 0 INCH FROM TOP OF APPLIANCE TO CEILING, 1 INCH FROM PLENUM SIDES AND WARM AIR DUCT WITHIN 3 FEET OF APPLIANCE. FOR CLOSET INSTALLATION A 250 SQ. IN. RETURN AIR OPENING MUST BE PROVIDED IN THE CLOSET DOOR. SEE INSTRUCTION MANUAL FOR LOCATION DETAILS. THIS FURNACE REQUIRES A SPECIAL VENTING SYSTEM. REFER TO INSTALLATION INSTRUCTIONS NO. MG-517 FOR PARTS LIST AND METHOD OF INSTALLATION.

390425(A)/0-5148 MA
1012-0T5295-MA

THERMO PRODUCTS, LLC.
P.O. BOX 217 - NORTH JUDSON, IN 46366

MAXIMUM VENT LENGTH 30 FT. MINIMUM VENT LENGTH 8 FT.
THIS FURNACE MUST BE INSTALLED IN ACCORDANCE WITH THERMO PRODUCTS INSTRUCTIONS AND LOCAL CODES. IN THE ABSENCE OF LOCAL CODES, CONFORM TO THE FOLLOWING CODES AS APPLICABLE:
NATIONAL FUEL GAS CODE, ANSI Z223.1
MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARD, TITLE 24 CFR, PART 3280
MANUFACTURED HOME INSTALLATION, ANSI/NCSBCS A225.1

THICKNESS OF THE WALL CONSTRUCTION THROUGH WHICH THE VENT-AIR INTAKE PIPES MAY BE INSTALLED. MINIMUM - 1/2", MAXIMUM - 18"

PERFORMANCE

THIS APPLIANCE IS A CATEGORY I, DIRECT VENT FORCED AIR FURNACE FOR MOBILE HOME OR TRAVEL TRAILER INSTALLATION. TESTED AT 0.3 INCHES OF WATER, STATIC PRESSURE. DESIGNED MAXIMUM OUTLET AIR TEMPERATURE 200°F OR LESS WITH A NOMINAL TEMPERATURE RISE OF 55°F. CONFORMS TO ANSI Z21.47b-CSA 2.3b-2008 CENTRAL FURNACE.

ELECTRICAL RATING

115 VOLTS 60 HERTZ 1 PHASE
MAXIMUM CURRENT AMPS 7.15

WARNING - RISK OF FIRE OR ELECTRIC SHOCK. ONLY CERTIFIED OR MANUFACTURER QUALIFIED SERVICE PERSONNEL SHALL BE USED TO INSTALL AND PROVIDE MAINTENANCE OF THIS APPLIANCE.

390425(B)/0-5059 MA
1012-0T5295-MA

POUR INSTALLATION DANS UNE MAISON PRÉFABRIQUÉE.
POUR INSTALLATION COMME TYPE SPÉCIAL DE CHAUDIÈRE

	TYPE DE GAZ	ENTRÉE (BTUH)	DIMENSION DE LA MÈCHE DE L'ORIFICE	PRESSION DE CANALISATION (POUCE D'EAU W. C.) MIN	MAX	PRESSION D'ADMISSION (POUCE D'EAU W. C.)
MODÈLE 50	NAT.	50 000	#42	4,5	14,0	3,5 POUCES D'EAU W. C.
SÉRIE	P.L.	50 000	#54 11,0	14,0		10,0 POUCES D'EAU W. C.
MODÈLE 75	NAT.	75 000	#42	4,5	14,0	3,5 POUCES D'EAU W. C.
SÉRIE	P.L.	75 000	#54 11,0	14,0		10,0 POUCES D'EAU W. C.

LA CHAUDIÈRE EST LIVRÉE DE L'USINE AVEC DES ORIFICES DE 42 POUR LE GAZ NATUREL. POUR LA CONVERSION AU GAZ P.L., VOIR LE MANUEL D'INSTRUCTIONS FOURNI AVEC CETTE CHAUDIÈRE.

INSTALLATION

LA CHAUDIÈRE PEUT ÊTRE INSTALLÉE DANS UN CABINET OU UNE ALCOVE MAIS ELLE DOIT ÊTRE À DES DISTANCES MINIMALES DES CONSTRUCTIONS ADJACENTES COMBUSTIBLES D'AU MOINS : 6 POUCES DE LA FACE AVANT DU CABINET, 18 POUCES DE LA FACE AVANT DE L'ALCOVE, 0 POUCE DE LA FACE ARRIÈRE, 0 POUCE DES FACES LATÉRALES, 0 POUCE DU TUYAU DU GAZ DE COMBUSTION, 0 POUCE DU SOMMET DE LA CHAUDIÈRE AU PLAFOND, 1 POUCE DES CÔTÉS DES PLÉNUMS ET DE LA CONDUITE D'AIR CHAUD À MOINS DE 3 PIEDS DE LA CHAUDIÈRE. POUR L'INSTALLATION DANS UN CABINET, IL FAUT PERCER UNE OUVERTURE DANS LA PORTE DE 250 POUCES CARRÉS POUR L'AIR REPRIS. VOIR LES DÉTAILS DE L'EMPLACEMENT DANS LE MANUEL D'INSTRUCTIONS. CETTE CHAUDIÈRE REQUIERT UN SYSTÈME DE VENTILATION SPÉCIAL.

LONGUEUR D'ÉVENT MAXIMALE : 30 PIEDS. LONGUEUR D'ÉVENT MINIMALE : 8 PIEDS.
CETTE CHAUDIÈRE DOIT ÊTRE INSTALLÉE CONFORMÉMENT AUX INSTRUCTIONS DU FABRICANT ET DES CODES LOCAUX. EN L'ABSENCE DE CODES LOCAUX, SE CONFORMER AUX CODES SUIVANTS, LE CAS ÉCHÉANT, :
NATIONAL FUEL GAS CODE, ANSI Z223.1
MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARD, TITLE 24 CFR, PART 3280
MANUFACTURED HOME INSTALLATION, ANSI / NCSBCS A225.1

ON PEUT INSTALLER LES TUYAUX D'ADMISSION D'AIR DE VENTILATION À TRAVERS UN MUR D'ÉPAISSEUR MINIMALE DE ½ PO ET D'ÉPAISSEUR MAXIMALE DE 18 PO.

PERFORMANCES

CET APPAREIL EST DE CATÉGORIE I, GÉNÉRATEUR D'AIR CHAUD PULSÉ À VENTILATION DIRECTE POUR MAISON MOBILE OU CARAVANE. TESTÉ À 0,3 PO D'EAU, PRESSION STATIQUE. CONÇU POUR UNE TEMPÉRATURE D'AIR DE SORTIE MAXIMALE DE 200 °F AVEC UNE ÉLÉVATION DE TEMPÉRATURE NOMINALE DE 55 °F. CONFORME AUX NORMES POUR CHAUDIÈRE CENTRALE ANSI Z21.47b-CSA 2.3b-2008. POUR MAXIMISER L'EFFICACITÉ, RÉGLER L'APPAREIL POUR AVOIR UNE ÉLÉVATION DE TEMPÉRATURE DE 40 °F.

CARACTÉRISTIQUES ÉLECTRIQUES

115 VOLTS, 60 HERTZ, 1 PHASE
INTENSITÉ DE COURANT MAXIMALE : 7,15 A

ATTENTION ! RISQUE D'INCENDIE ET DE CHOC ÉLECTRIQUE. SEULS LE PERSONNEL AGRÉÉ ET LE PERSONNEL DE SERVICE QUALIFIÉ DU FABRICANT PEUVENT INSTALLER ET ENTRETENIR CET APPAREIL.

390560

NATURAL/PROPANE GAS CONVERSION INSTRUCTIONS

An alternate main burner orifice and a gas valve pressure regulator conversion kit are supplied with this furnace.

1. Shut off electric power at the furnace and close the manual gas shutoff valve serving the furnace.

2. Disconnect the gas supply pipe from the gas control valve. Disconnect the wires and 1/4" tubing (if provided) from the gas control valve.

3. Remove the manifold and gas valve assembly from the furnace.

4. Carefully remove and replace all the orifices in the manifold with those supplied in the conversion kit.

5. Remove the cap screw from gas valve pressure regulator. Turn the plastic regulator screw counter clockwise to remove it.

6. Remove the regulator spring and replace it with the spring found in the pressure regulator conversion kit. Replace plastic regulator screw and turn the screw clockwise about 6 complete turns. (Refer to any instructions supplied in the kit)

7. Reassemble gas valve and manifold assembly to the furnace. Reconnect the gas piping, wiring, and 1/4" tubing (if provided) to the gas control valve.

8. Open the manual gas shutoff valve and turn on the electrical power.

9. Check for gas leaks before placing furnace back in operation.

10. During burner operation, turn the regulator screw (located beneath the gas valve pressure regulator cap screw) to obtain the required burner manifold pressure, refer to the rating label for correct settings.

390511

All installations and services must be performed by qualified service personnel.

The following safety information should be read, understood, and followed by the installer.

1. Use only with type of gas approved for this furnace. Refer to furnace rating plate.

2. Do not install this furnace where it could be exposed to drafts or other wind or moisture conditions. Refer to Section IV of this manual.

3. Provide adequate ventilation air to the furnace space. Refer to Section IV, C and D, of this manual.

4. Connect this furnace to an approved vent system only. Combustion products must be carried outdoors. Refer to Section IV, F thru J, of this manual.

5. Never test for gas leaks with an open flame. Leak test methods must comply with State, Local and National codes including the National Fuel Gas Code NFPA 54/ANSI-Z233.1 (Latest Edition).

6. Always install furnace with a duct system that has an external static pressure within the allowable range referenced in specifications.

7. Make sure supply air ducts are completely sealed to the furnace casing. Refer to Section IV.

The following pages contain various warnings and cautions found throughout the Thermo Pride Gas Fired High Efficiency Furnace Manual. Please read and comply with the statements below.

⚠WARNING: This furnace is not to be used for temporary heating of buildings or structures under construction.

⚠CAUTION: These high efficiency condensing furnaces are not certified for and shall not be vented into a standard or any type of chimney.

⚠CAUTION: Negative pressure inside the closet with closet door closed and the furnace blower operating on high speed shall be no more negative than minus 0.05 inch water column.

⚠WARNING: Do not obstruct any return air openings, including the return grille on the furnace. To do so may cause the furnace to activate the high limit and shut down.

All installations and services must be performed by qualified service personnel.

⚠CAUTION: The vent and air intake elbows must be kept away from bushes, shrubs or any vegetation that may restrict the flow of flue products. It must also be kept clear of any leaves, weeds or other combustible materials. Keep the vent hood clear of snow. Avoid locating the terminals in areas where standing water or condensate drippage may be a problem.

⚠WARNING: This CMA/CMC furnace has been designed to be installed as a direct vent system and must have its combustion air brought in from outside the conditioned space. The failure to install the vent/air intake system as specified in these instructions will void the heat exchanger warranty and may result in property damage, personal injury or loss of life.

⚠CAUTION: Outside combustion air must not come from an area that is directly adjacent to a pool, hot tub or spa. Measures should be taken to prevent the entry of corrosive chemicals or vapors to the combustion and ventilation air supply. Such chemicals include but are not limited to chlorinated and/or fluorinated hydrocarbons such as found in refrigerants, aerosol propellants, dry cleaning fluids, degreasers and removers. Other harmful compounds may come from bleaches, air fresheners or mastics. Vapors from such products can form acid compounds when burned in a gas flame. Should acid compounds form in your furnace, it may reduce the life of the furnace.

⚠WARNING: Because of the potential of odorant fade, a gas leak may not be detected by smell. If this furnace is installed below grade, contact your gas supplier for a gas detector.

⚠WARNING: All gas piping must be leak tested methods approved by State, Local and National Codes including the National Fuel Gas Code NFPA 54/ANSI-Z233.1 (Latest Edition). A final test for gas leakage must be made after purging the gas line. This test must be conducted with the unit operating and should include the furnace piping and gas valve. Never use an open flame to check for a gas leak.

⚠CAUTION: Care must be taken not to wet electronic components during leak test. Wetting the primary ignition module may damage its circuitry and cause a hazardous situation. Dry moisture from all leads and terminals if wetting occurs. Wait at least 24 hours for the circuit to fully dry before energizing the burner circuit.

⚠WARNING: The furnace and its individual gas shutoff valve must be disconnected from the gas supply during pressure testing of the gas supply system at pressures in excess of 1/2 PSIG or 14.0" w.c. The furnace must be isolated from the gas supply by closing its manual shut off valve at test pressures equal to or greater than 1/2 PSIG or 14.0" w.c.

All installations and services must be performed by qualified service personnel.

⚠WARNING: Copper and brass tubing and fittings (except tin lined) shall not be used if the gas contains more than a trace (0.3 grains per 100 cubic ft.) of hydrogen sulfide gas. Check with your gas supplier.

⚠WARNING: TURN OFF THE ELECTRICAL POWER to the furnace before attempting to change blower speed wiring.

⚠WARNING: Turn off power to furnace before it is placed into service. The gas piping system must have been leak tested by a qualified heating contractor in accordance with State, Local and National Codes including the National Fuel Gas Code NFPA 54/ANSI-Z233.1 (Latest Edition).

⚠WARNING: It may be necessary to purge the air out of the gas line for initial start-up of the furnace after installation. This should be done by a qualified heating contractor. If excessive gas escapes when purging the gas supply at the union, allow the area to ventilate for at least 15 minutes before attempting to start the furnace. LP gas is especially dangerous because the specific gravity of LP gas allows it to accumulate at floor level at a dangerous concentration.
⚠WARNING: Heat exchanger oil will burn off on initial firing creating an unpleasant odor. To prevent this odor from occurring more than once, it is suggested that:
1. A window(s) be opened.
2. The thermostat set at highest setting.
3. The furnace remain running at conditions 1&2 above for 15 minutes or until odor has dissipated.

⚠CAUTION: The CMA/CMC furnace models are of direct vent design and do not require an air shutter adjustment (air shutters are not used) for proper flame characteristics. Burner box access cover must always be secured with all screws in place and tightened before operating furnace.

⚠WARNING: Personal injury or property damage could result from repair or service of this furnace by anyone other than a qualified heating contractor.

⚠CAUTION: Label wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

⚠CAUTION: The inducer motor mounting plate gasket and the collector box gasket must be replaced if they show any sign of having been damaged.

⚠WARNING: Power must be disconnected before servicing.

All installations and services must be performed by qualified service personnel.

II. FURNACE SPECIFICATIONS

MODEL	**CMA3-50D36**	**CMA3-75D36**
INPUT IN BTUH	50,000	75,000
OUTPUT IN BTUH	48,000	72,000
MAIN ORIFICE-NAT.	#42	
MAIN ORIFICE-LP	#54	
GAS SUPPLY PRESSURE		
L.P. MINIMUM	11" IN.W.C.	
NAT. MINIMUM	4.5"IN.W.C.	
L.P. MAXIMUM	14" IN.W.C.	
NAT. MAXIMUM	14" IN.W.C.	
GAS MANIFOLD PRESSURE		
L.P.	10.0" ± .03 IN.W.C.	
NAT.	3.5" ± .03 IN. W.C.	
INTAKE SIZE IN INCHES	2"	
VENT SIZE IN INCHES	2"	
NOMINAL TEMPERATURE RISE	55°F	65°F
SEASONAL EFFICIENCY (AFUE*)	95%	
*ANNUAL FUEL UTILIZATION EFFICIENCY		

DIMENSIONS	
CABINET SIZE	WIDTH 18" DEPTH 25-3/4" HEIGHT 57"
SUPPLY AIR OUTLET	WIDTH 12" DEPTH 12"
ELECTRICAL SUPPLY	115 VOLTS-- 60HZ --1/PH
FUSE OR HACR BREAKER	15 AMPS
TOTAL CURRENT AMPS	7.15 AMPS
NOMINAL ANTICIPATOR SETTING	0.8 MILLIAMPS
FILTER SIZE	(1) 18" X 24" X 1"
APPROXIMATE SHIPPING WEIGHT	175 LBS. / 185 LBS.

BLOWER DATA	
BLOWER MODEL	12-9T DIRECT DRIVE
MOTOR HORSEPOWER	1/2 PSC
MOTOR RPM	1065 (HIGH SPEED)

CFM @ .2 & .5 IN. W.C.	SPEED	.2"	.5"	.2"	.5"
	LOW	805	695	797	668
	MD-LOW	1010	860	995	869
	MD-HIGH	1196	1038	1210	1076
	HIGH	1338	1162	1420	1259

FOR BURNER COMBUSTION INFORMATION REFER TO INITIAL STARTUP.

All installations and services must be performed by qualified service personnel.

MODEL	**CMC1-50D36**	**CMC1-75D36**
INPUT IN BTUH	50,000	75,000
OUTPUT IN BTUH	48,000	72,000
MAIN ORIFICE-NAT.	#42	
MAIN ORIFICE-LP	#54	
GAS SUPPLY PRESSURE		
L.P. MINIMUM	11" IN.W.C.	
NAT. MINIMUM	4.5"IN.W.C.	
L.P. MAXIMUM	14" IN.W.C.	
NAT. MAXIMUM	14" IN.W.C.	
GAS MANIFOLD PRESSURE		
L.P.	10.0" ± .03 IN.W.C.	
NAT.	3.5" ± .03 IN. W.C.	
INTAKE SIZE IN INCHES	2"	
VENT SIZE IN INCHES	2"	
NOMINAL TEMPERATURE RISE	55°F	65°F
SEASONAL EFFICIENCY (AFUE*) *ANNUAL FUEL UTILIZATION EFFICIENCY	95%	

DIMENSIONS	
CABINET SIZE	WIDTH 18-3/4" DEPTH 25-3/4" HEIGHT 76-1/8"
SUPPLY AIR OUTLET	WIDTH 12" DEPTH 12"
ELECTRICAL SUPPLY	115 VOLTS-- 60HZ --1/PH
FUSE OR HACR BREAKER	15 AMPS
TOTAL CURRENT AMPS	7.15 AMPS
NOMINAL ANTICIPATOR SETTING	0.8 MILLIAMPS
FILTER SIZE	(1) 18" X 24" X 1"
APPROXIMATE SHIPPING WEIGHT	195 LBS. / 205 LBS.
BLOWER DATA	
BLOWER MODEL	12-9T DIRECT DRIVE
MOTOR HORSEPOWER	1/2 PSC
MOTOR RPM	1065 (HIGH SPEED)

CFM @ .2 & .5 IN. W.C.	SPEED	.2"	.5"	.2"	.5"
	LOW	805	695	797	668
	MD-LOW	1010	860	995	869
	MD-HIGH	1196	1038	1210	1076
	HIGH	1338	1162	1420	1259

FOR BURNER COMBUSTION INFORMATION REFER TO INITIAL STARTUP.

All installations and services must be performed by qualified service personnel.

MODEL	**CMC1-50DV3**	**CMC1-75DV3**
INPUT IN BTUH	50,000	75,000
OUTPUT IN BTUH	48,000	72,000
MAIN ORIFICE-NAT.	#42	
MAIN ORIFICE-LP	#54	
GAS SUPPLY PRESSURE		
L.P. MINIMUM	11" IN.W.C.	
NAT. MINIMUM	4.5"IN.W.C.	
L.P. MAXIMUM	14" IN.W.C.	
NAT. MAXIMUM	14" IN.W.C.	
GAS MANIFOLD PRESSURE		
L.P.	10.0" ± .03 IN.W.C.	
NAT.	3.5" ± .03 IN. W.C.	
INTAKE SIZE IN INCHES	2"	
VENT SIZE IN INCHES	2"	
NOMINAL TEMPERATURE RISE	55°F	65°F
SEASONAL EFFICIENCY (AFUE*) *ANNUAL FUEL UTILIZATION EFFICIENCY	95%	

DIMENSIONS	
CABINET SIZE	WIDTH 18-3/4" DEPTH 25-3/4" HEIGHT 76-1/8"
SUPPLY AIR OUTLET	WIDTH 12" DEPTH 12"
ELECTRICAL SUPPLY	115 VOLTS-- 60HZ --1/PH
FUSE OR HACR BREAKER	15 AMPS
TOTAL CURRENT AMPS	7.15 AMPS
NOMINAL ANTICIPATOR SETTING	0.8 MILLIAMPS
FILTER SIZE	(1) 18" X 24" X 1"
APPROXIMATE SHIPPING WEIGHT	195 LBS. / 205 LBS.

BLOWER DATA

BLOWER MODEL	12-9T DIRECT DRIVE
MOTOR HORSEPOWER	1/2 ECM
MOTOR RPM	1075 (HIGH SPEED)

CFM @ .2 & .5 IN. W.C.	SPEED	.2"	.5"	.2"	.5"
	LOW	639	437	935	802
	MD-LOW	834	653	998	880
	MED	948	811	1113	1007
	MD-HIGH	1145	1026	1177	1083
	HIGH	1365	1265	1272	1177

FOR BURNER COMBUSTION INFORMATION REFER TO INITIAL STARTUP.

All installations and services must be performed by qualified service personnel.

INSTALLATION PARTS PACKAGES

PARTS PKG# / DESCRIPTION	CMA3-50D36N S00S4248		CMA3-75D36N S00S4249	
	PART #	QTY	PART #	QTY
J-box cover	350020	1	350020	1
Wire nut	300132	2	300132	2
3" stainless steel hose clamp	300276	4	300276	4
2-3/8" radiator hose	410017	2	410017	2
CPVC adapter	320833	1	320833	1
LP conversion kit	AOPS7741	1	AOPS7742	1

PARTS PKG# / DESCRIPTION	CMC1-50D36N S00S4190		CMC1-75D36N S00S4191	
	PART #	QTY	PART #	QTY
J-box cover	350020	1	350020	1
Wire nut	300132	2	300132	2
3" stainless steel hose clamp	300276	4	300276	4
2-3/8" radiator hose	410017	2	410017	2
CPVC adapter	320833	1	320833	1
LP conversion kit	AOPS7741	1	AOPS7742	1
Gasket, drain knock-out	330355	1	330355	1
Grommet, vinyl 3/8"	350040	1	350040	1
Grommet, vinyl 7/8"	350009	1	350009	1
Screw, #8 x 1/2 Tek	300208	6	300208	6
Coil trim panel	619113	1	619113	1
Bushing, UB-875	350750	1	350750	1
Bushing, SR-34-2	350016	1	350016	1

PARTS PKG# / DESCRIPTION	CMC1-50DV3N S00S4244		CMC1-75DV3N S00S4245	
	PART #	QTY	PART #	QTY
J-box cover	350020	1	350020	1
Wire nut	300132	2	300132	2
3" stainless steel hose clamp	300276	4	300276	4
2-3/8" radiator hose	410017	2	410017	2
CPVC adapter	320833	1	320833	1
LP conversion kit	AOPS7741	1	AOPS7742	1
Gasket, drain knock-out	330355	1	330355	1
Grommet, vinyl 3/8"	350040	1	350040	1
Grommet, vinyl 7/8"	350009	1	350009	1
Screw, #8 x 1/2 Tek	300208	6	300208	6
Coil trim panel	619113	1	619113	1
Tape, aluminum 2"	390111	42"	390111	42"
Bushing, UB-875	350750	1	350750	1
Bushing, SR-34-2	350016	1	350016	1

III. GENERAL INSTRUCTIONS AND CLEARANCES – READ BEFORE START OF INSTALLATION

1. The BTU output capacity of the furnace proposed for installation should be based on a heat loss calculation made according to the manuals provided by the Air Conditioning Contractors of America (ACCA) or the American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE).

2. This furnace is equipped with orifices sized for operation with natural gas. For conversion to Propane Gas see instruction MG-815 in Gas Conversion Kit AOPS7743.

3. These Category Type IV furnaces are shipped completely assembled and wired (internally). See the Dealer Receiving and Freight Claim Procedure Section of the price guide for parts shortage or damage. The furnace and duct system must be adjusted to obtain a temperature rise of 40°F to 70°F through the furnace after installation. For the Energy Star Eco Tech models the temperature rises are 40°F to 70°F for the 50 series and 50°F to 80°F for the 75 series. (See rating label located on separator panel inside the furnace vestibule). The installation must conform with local codes, or in the absence of local codes, with the National Fuel Gas Codes (ANSI Z223.1 or latest edition) and with these instructions.

⚠WARNING*: This furnace is not to be used for temporary heating of buildings or structures under construction.*

Many of the chemicals used during construction, when burned, form acid bearing condensate that can substantially reduce the life of the heat exchanger.

4. It is recommended that a commercially available CO alarm be installed in conjunction with any fossil fuel burning appliance. The CO alarm shall be installed according to the alarm manufacturer's installation instructions and be listed in accordance with the latest edition of the UL Standard for Single and Multiple Station Carbon Monoxide Alarms, UL 2034, or the CSA International Standard, Residential Carbon Monoxide Alarming Devises, CSA 6.19.

5. The installer shall be familiar with and comply with all codes and regulations applicable to the installation of these heating appliances and related equipment. In lieu of local codes, the installation shall be in accordance with the current provisions of one or more of the following standards.

a. Federal Manufactured Home Constructions & Safety Standard (H.U.D. Total 24, Part 280.)
b. American National Standard (ANSI-119.2/NFPA-501C) for all recreational vehicle installations.

c. American National Standard (ANSI-Z223.1/NFPA-54) for all gas-fired furnaces.
d. American National Standard (ANSI-C1/NFPA-70 Electric Code for all electrical field wiring.
e. These gas-fired units have been investigated under standards ANSI Z 21.47 CAN/CGA Z223-2001 Central Furnace test standards.
f. These gas-fired units have been listed by ETL "For installation as central furnace special type for single story dwelling."

⚠**WARNING**: ***The area around the furnace must be kept free and clear of combustible materials, especially papers and rags.***

⚠**WARNING**: ***This furnace is not to be used as a construction heater.***

Listed below are definitions of " COMBUSTIBLE MATERIAL" and "NON-COMBUSTIBLE MATERIAL."

COMBUSTIBLE MATERIAL:

Material made of or surfaced with wood, compressed paper, plant fibers, plastics or other material that will ignite.

NON-COMBUSTIBLE MATERIAL:

Material that will not ignite and burn. Such materials consist entirely of steel, iron, brick, tile, concrete, slate, glass or a plaster combination thereof.

MODELS CMA3/CMC1	CLOSET	ALCOVE
FRONT	6"	18"
BACK	0"	0"
SIDES	0"	0"
VENT CONNECTOR(PVC)	0"	0"
TOP	0"	0"
PLENUM SIDES	1"	1"
TOP AND SIDES OF DUCT	1"	1"
BOTTOM OF DUCT	1"	1"

Table 1

This heating appliance must be installed with clearances not less than the minimums shown above as well as ample clearance for easy access to the air filter, blower assembly, burner assembly, controls, and vent connections.

IV. GENERAL INSTALLATION

A. FURNACE LOCATION

1. For best performance, locate the furnace so that it is centralized with respect to the duct system.

2. The furnace installation is only intended for free air return through the furnace door louvers. **DO NOT** connect a ducted return air system directly to the furnace. An improper return air installation may create a hazard and damage equipment, as well as void all warranties.

3. Model CMA3 furnace may be installed on a combustible floor when utilizing either the No. 70 counterflow floor base or CE113S / CE213T coil cabinet for below the floor duct systems, or the cottage base for floor level air distribution. See Figure 1A for description of Combustible Floor Base and Figure 1C for Cottage Base.

4. Model CMC1 furnace is designed to be installed directly on a combustible floor and is not required to be installed on a base.

This furnace is ETL listed for closet, alcove or free standing applications. All applications must comply with the requirements of this manual.

Combustible Floor Base Model: 70-BASE
For CMA3 models only.

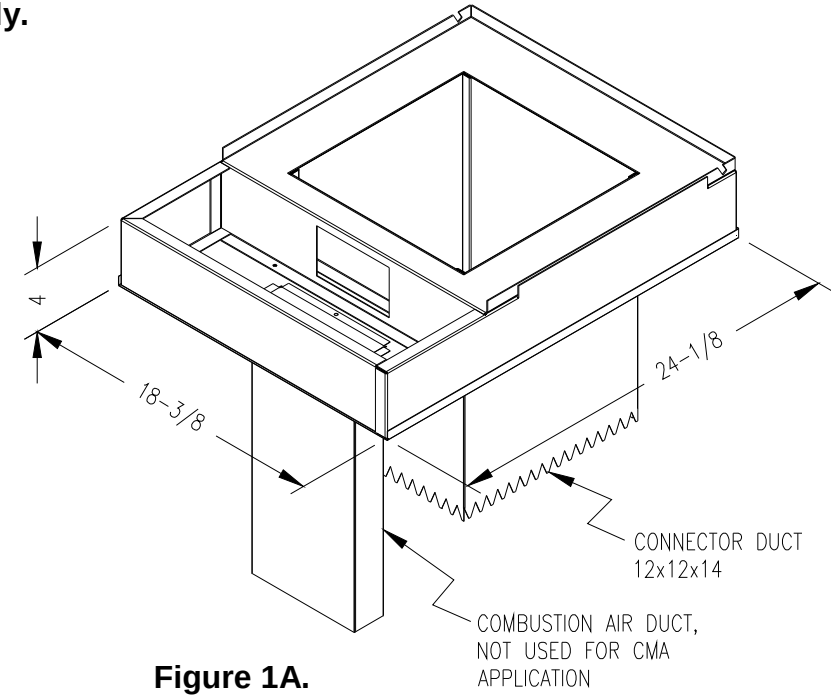
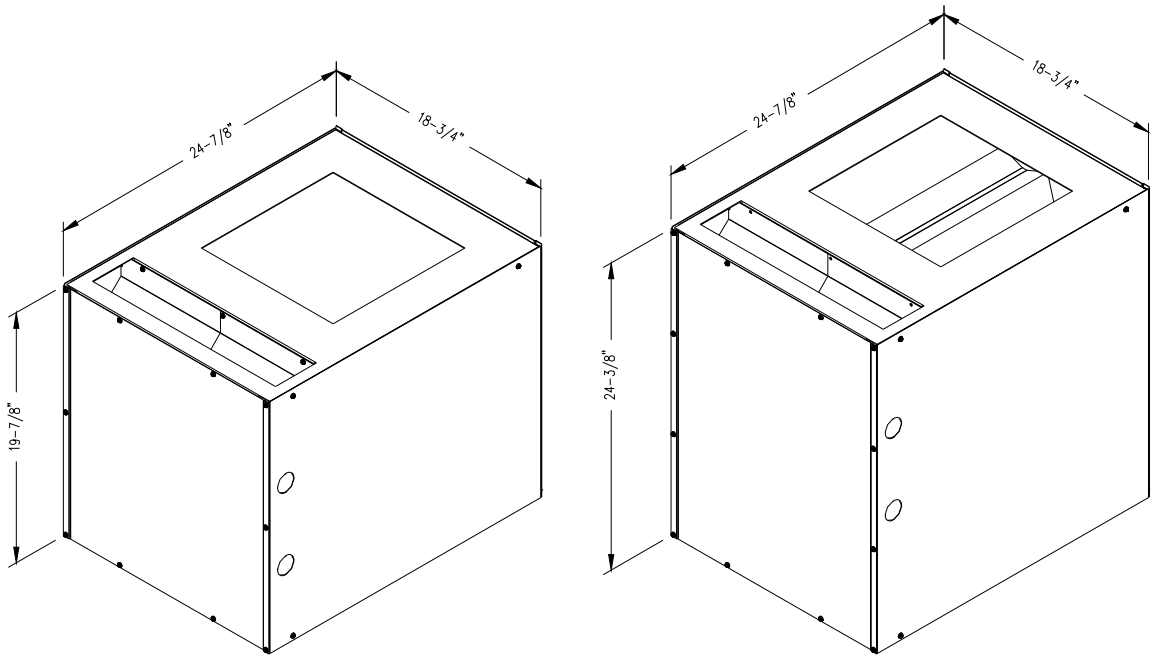


Figure 1A.

Coil Cabinet Model: CE113S / CE213T
Note: Coil cabinet cannot be utilized as a cottage base.



CE113S **CE213T**

Figure 1B.

Cottage Base Model: 01COT-BASE
For CMA3 models only.
NOTE: Serves as a plenum for single story applications with exposed supply air systems.

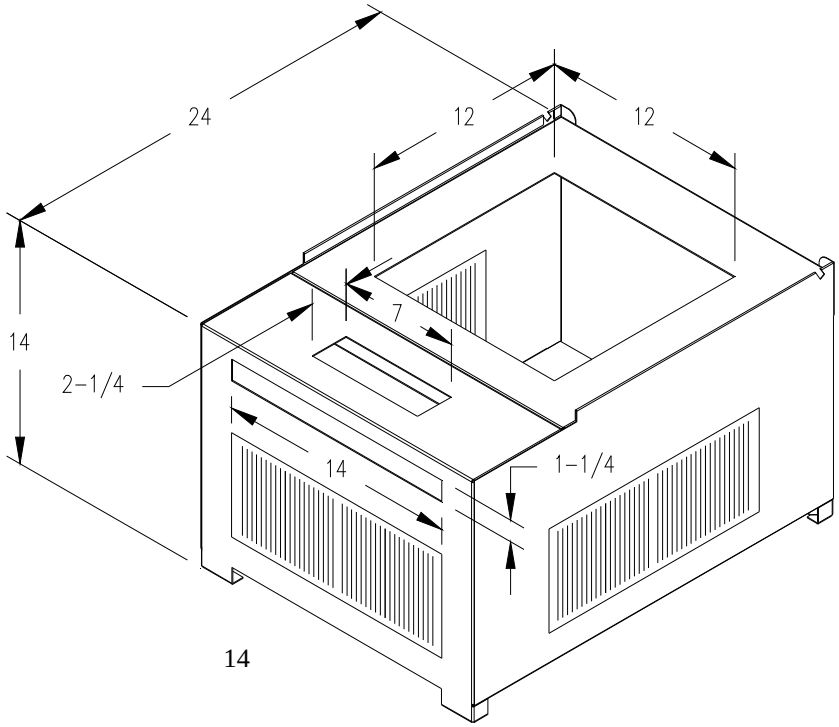


Figure 1C.

B. BASE INSTALLATION – CMA3 models only

1. Combustible Floor Base Model: 70 BASE (for CMA3 models only)

Use the base bottom panel as a template to mark floor opening locations (see Figure 2). Cut a square opening in the floor for the supply air connector duct. Cut the opening 1-inch larger than the square template opening. (duct requires 1-inch clearance to combustible floor).

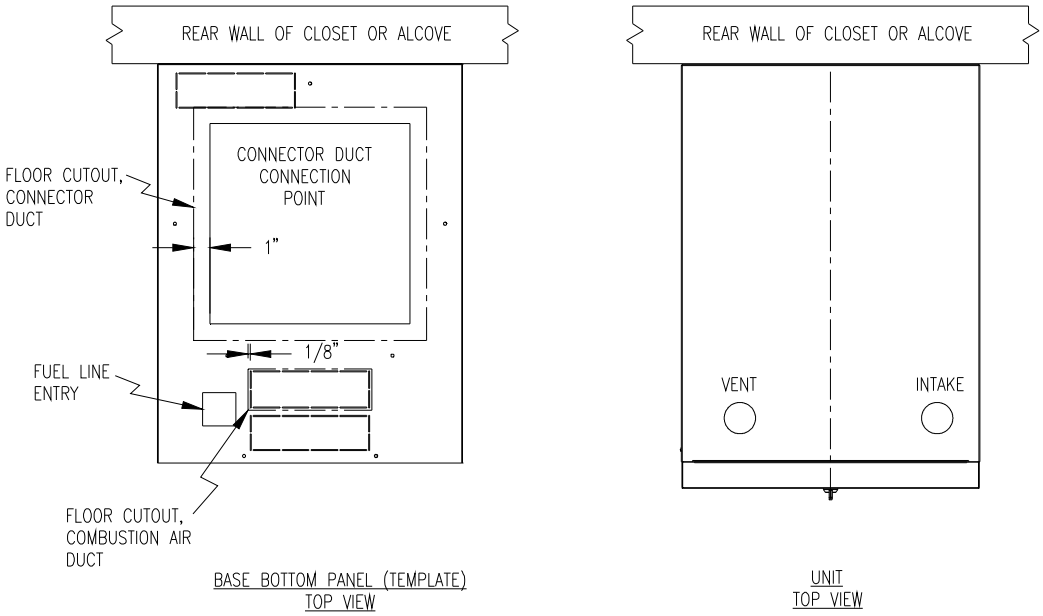


Figure 2.

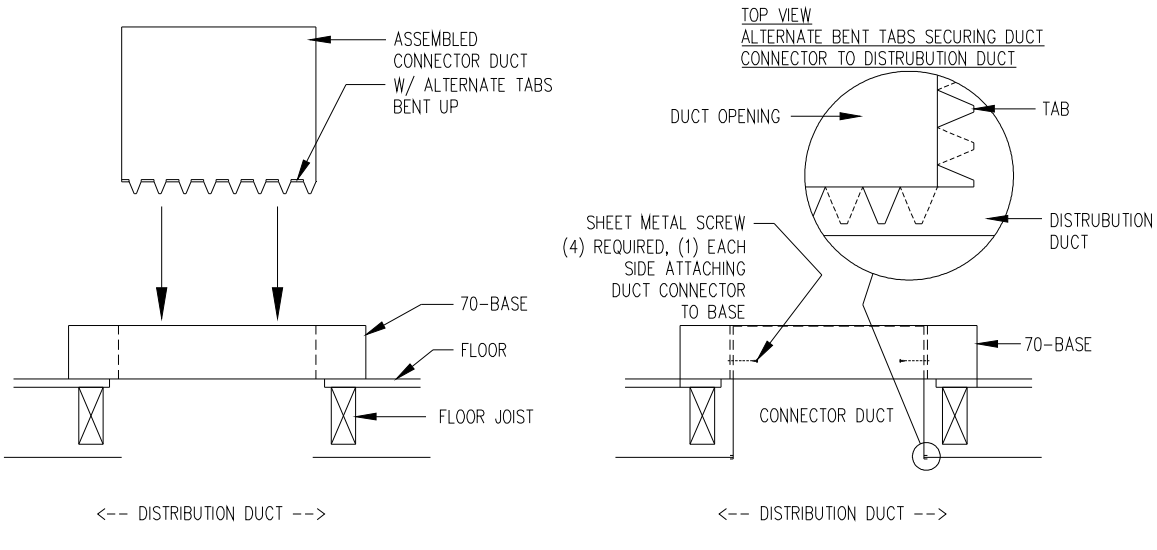


Figure 3.

After cutting openings in the floor, place the bottom panel in position. Mark the square opening location on the distribution duct at the connection point of the connector duct. Remove the bottom panel. Cut an opening in the distribution duct slightly larger than the connector duct. (refer to Figure 2 for location of this cut.) Cut the connector duct to length. Install the connector duct. Bend over each tab. Insure an airtight seal by using high temperature sealant or tape on the joint. Reinstall the bottom panel over the connector duct. Put the base top assembly in place (see Figure-3).

Slit the corners of connector duct down to the top of the base assembly. If metal projects more than 1-inch above the top of the base assembly, trim the flanges down to 1-inch. While the top of distribution duct is being pulled up with one hand, bend down each side of the connector duct tightly to the base assembly with the other hand. This assures a tight connection between the base assembly and the connector duct and that the distribution duct will be full size. Use high temperature tape and/or high temperature silicone caulking on all joints and seams to minimize air leakage. Secure the base assembly to the floor with two screws in the front flange.

2. Cottage Base Model: 01COT BASE (for CMA3 models only)

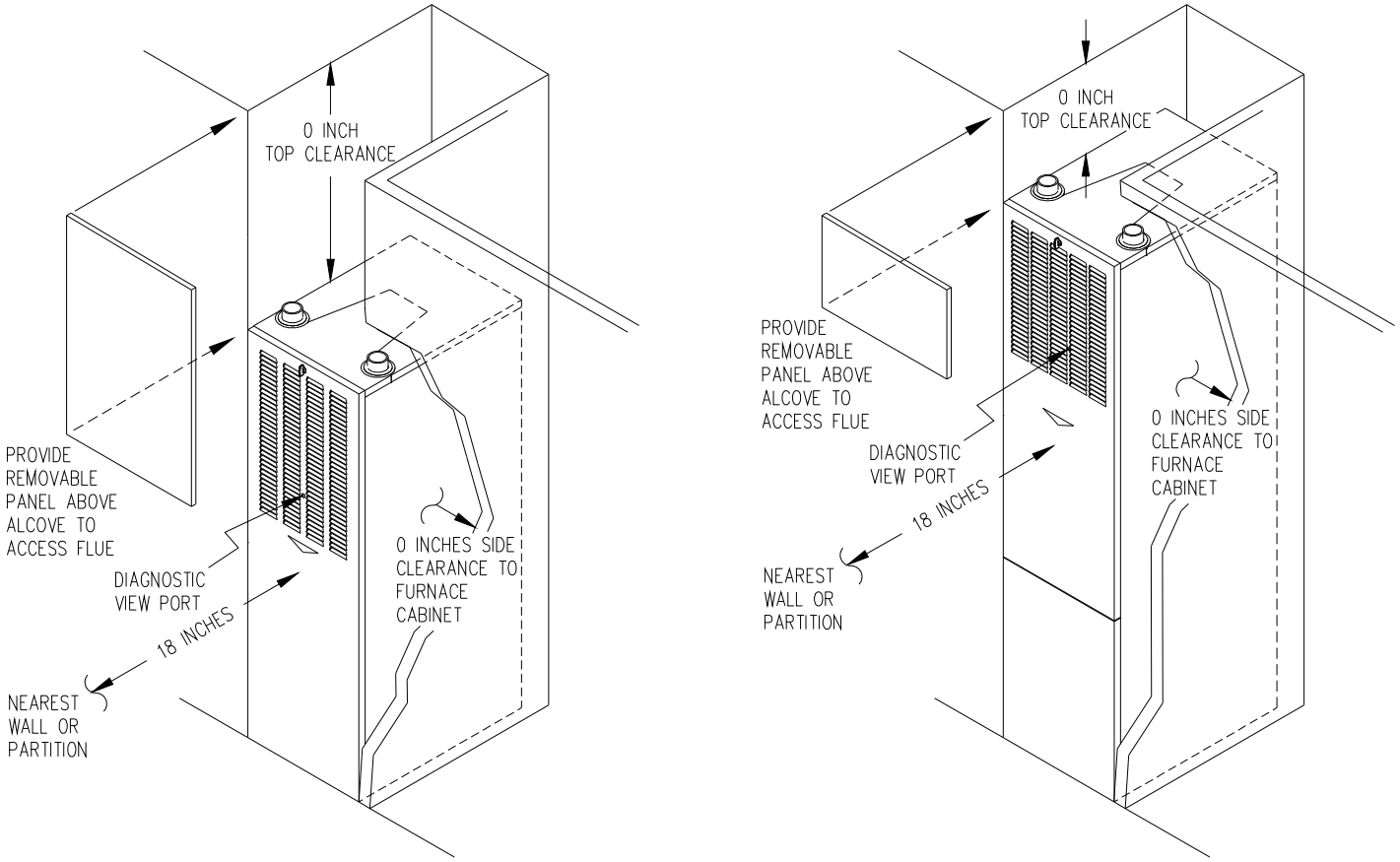
The 01COT BASE cottage base (Figure 1C) is required for a freestanding cottage base installation. The cottage base allows the two sides and rear to have an 8" x 12" register installed. **IMPORTANT*: All joints and seams of supply ducts must be sealed with a sealing method suitable to the application conditions and temperatures (I.E. High temperature silicone and/or aluminum tape).*** Refer to assembly and installation instructions included with cottage base for additional information.

The model CMC does not require a base for installation. The integrated coil cabinet serves as a base. The duct connection will be made to the bottom of the furnace. A sheet metal cover plate may be installed to protect any exposed combustible flooring.

C. ALCOVE INSTALLATION

In this application, a minimum of 18 inches of clearance **must** be provided to the front of the unit. See Figure 4.

Note – access to diagnostic view port.



CMA3 SERIES CMC1 SERIES

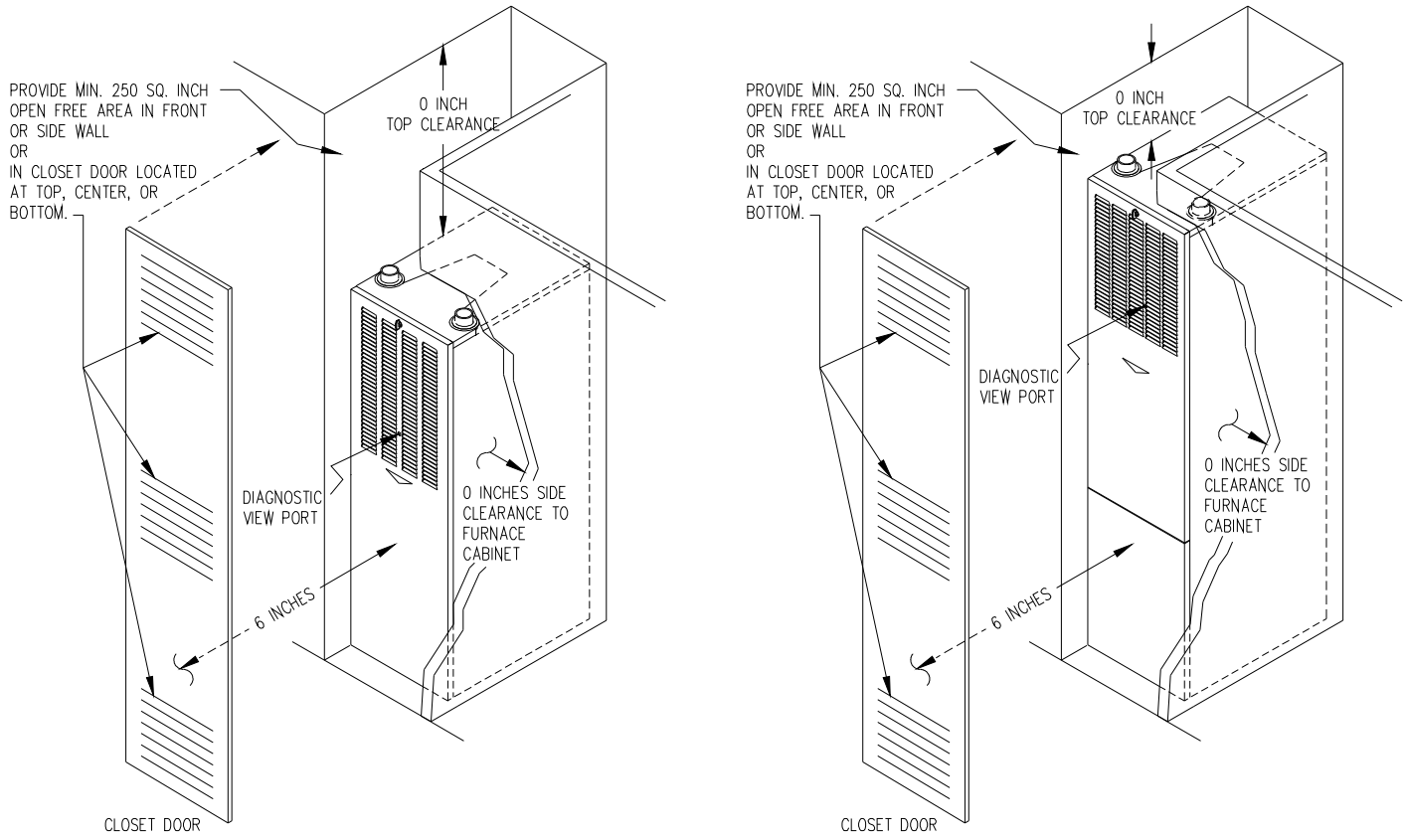
Figure 4.

D. CLOSET INSTALLATION

1. The return air opening into the closet is to have a **minimum** free area of 250 sq. in. (see Figure 5).

2. The return air opening may be located in the top, center or (ideally) bottom of the closet door or side wall.

All installations and services must be performed by qualified service personnel.



CMA3 SERIES CMC1 SERIES

Figure 5.

⚠**WARNING**: ***Do not obstruct any return air openings, including the return grille on the furnace. To do so may cause the furnace to activate the high limit and shut down.***

3. The cross-sectional area of the return system leading into the closet (when located in the floor or ceiling) shall not be less than 250 square inches.

4. The total free area of openings in the floor or ceiling registers serving the return duct system must be at least 350 square inches. At least one register must be located where it is not likely to be covered by carpeting, boxes, furniture or other objects.

5. Materials located in the return duct system must have a flame spread classification of 200 or less.

6. Non-combustible pans having one inch upturned flanges are to be located beneath openings in a floor return duct system.

7. Wiring materials located in the return duct system must conform to articles 300-22 of the National Electrical Code NFPA70 (Latest Edition).

8. Gas piping is not to be located in or through the return duct system.

E. FUEL PIPING

Sizing and installation of fuel lines must be in accordance with Federal, State & Local regulations. Including the National Fuel Gas Code NFPA 54/ANSI-Z233.1 (Latest Edition).

NOTE: These furnaces are designed to be gas piped through the left side or the bottom. For service purposes, it is recommended that the gas union be located inside the furnace when possible.

⚠WARNING: Because of the potential of odorant fade, a gas leak may not be detected by smell. If this furnace is installed below grade, contact your gas supplier for a gas detector.

A qualified installer or service person must perform all gas piping and testing. Piping from the natural gas meter to the furnace shall be in accordance with requirements of the local gas utility. Piping from the LP tank to the furnace must follow the recommendations of the gas supplier.

A readily accessible manual shut off valve (certified for the applicable gas) with a non-displaceable rotor member shall be installed within six feet of the gas equipment it serves.

A union or flanged connection shall be provided directly up stream of the burner to allow burner removal. Unions must be of a ground joint type or flange-jointed type using a gasket resistant to the applicable gas. Pipe dope or sealant certified to be resistant to the action of the applicable gases should be used on all threaded joints.

A drip leg must be used on both LP and Natural gas installations prior to the furnace in order to trap oil, condensate and other impurities which might otherwise lodge in the gas valve or plug the burner orifice.
A drip leg shall be provided at the outlet of the gas meter when there is excessive condensation between the gas meter and the furnace. Failure to install a drip leg may void the limited warranty on the furnace.

⚠WARNING: All gas pipe connections must be leak tested using methods approved by State, Local and National Fuel Gas Code NFPA 54/ANSI-Z233.1 (Latest Edition). Any leaks must be repaired immediately after turning off the gas supply. A final test for gas leakage must be made after purging the gas line.

⚠CAUTION: DO NOT wet electronic components during the leak test. Wetting electronic components may damage circuitry and cause a

hazardous situation. Dry moisture from all leads and terminals if wetting occurs. Wait at least 24 hours for the circuit to fully dry before energizing the system.

⚠**WARNING***: The furnace and its gas valve must be disconnected from the gas supply during pressure testing of the gas supply system at pressures in excess of 1/2 PSIG or 14 inches w.c*

F. GENERAL VENTING REQUIREMENTS

The CMA/CMC furnace venting system must be installed by a qualified service person in accordance with local codes, the National Fuel Gas Code NFPA 54/ANSI-Z223.1 (Latest Edition) and these instructions.

The following items and local code requirements must be followed:

1. The vent/air intake terminations outlined by Thermo Products in this manual must be used.

2. The entire vent/air intake system must be made of PVC Schedule 40 pipe except for the concentric vent kit. **NOTE:** All CMA/CMC furnaces must be installed with outside combustion air.

3. The flue vent pipe and combustion air pipe must be at least as large as the exhaust vent/air intake pipe specified by Thermo Products. No reduction in size is permissible. The CMA/CMC requires 2” Schedule 40 PVC pipe.

4. This furnace shall not be common vented with any other appliance including those burning solid fuels.

5. The maximum permissible vent length of straight pipe and number of elbows permitted for the exhaust vent and combustion air inlet is shown in Table 2. The elbows shown are in addition to the length of straight pipe permitted. When counting elbows, all elbows used in the exhaust vent or combustion air intake must be counted. This includes elbows used inside the furnace jacket and termination elbows.

Care should be taken to plan out the vent system to be as short as possible (but not shorter than 8 ft.) and to contain as few elbows as possible to insure the best possible operation of the furnace.

MAXIMUM VENT LENGTH

VENT SIZE	2 IN. PVC		
FURNACE MODEL	VENT LENGTH (FT.)	EXHAUST VENT ELBOWS (NO.)	COMBUSTION AIR INTAKE ELBOWS (NO.)
CMA*/CMC*	30	8*	7**

*Note the drain elbow supplied with furnace count as 1 elbow.
**Note the two 45° elbows supplied with furnace count as 1 elbow.

Table 2

6. A hack saw may be used to cut the PVC pipe. It must be cut smoothly at right angles with all burrs removed. All joints must use standard PVC Schedule 40 elbows and couplings. Joints are not to be made by gluing, except where noted, and butting together the cut or raw edges of the vent pipe. (The joints inside the vestibule should be sealed with a silicone caulk to allow for maintenance.) **Notice: Do not use silicone caulk to seal the PVC sleeve or coupling to the metal air intake collar on the burner box. The screw securing the sleeve or coupling to the collar is sufficient.**

7. Use the two radiator hose clamps to connect both the exhaust vent and combustion air vent pipes to the venting system (included in the parts package.) This will aid in the serviceability of the vent should it need to be removed in the future. (Refer to figure 6).

8. Vent connections shall be checked for leakage with the furnace induced draft blower running and with the vent termination blocked. A mild soap and water solution may be used to check for leaks.

9. Vent pipe passing through an unheated space must be insulated with 1.0" thick foil faced fiberglass insulation or its equivalent to prevent freezing of any condensate within the pipe.

10. Minimum clearance from the PVC pipe to combustible material is zero inches.

IMPORTANT: The CMA/CMC furnace models are vented through the roof. For roof venting refer to Section IV, J, of this manual.

G. CONNECTING THE EXHAUST VENT AND COMBUSTION AIR INTAKE

Figure 6. shows the typical exhaust vent and combustion air intake connection for CMA/CMC furnace.

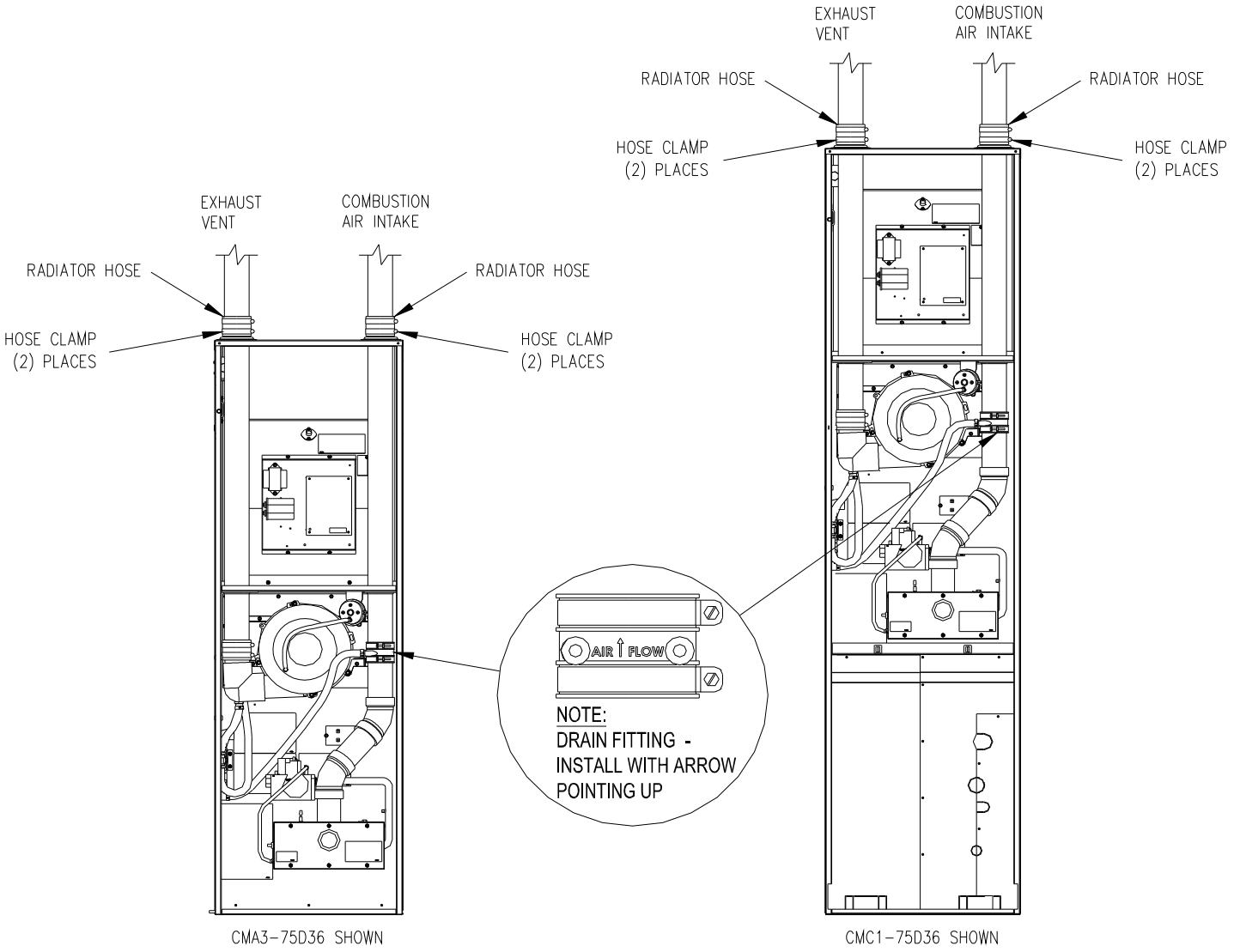


Figure 6.

Models CMA and CMC have a removable top front panel that will allow for improved access to assist installation of the exhaust vent and combustion air intake connection to the top of the furnace. Access is gained by removal of two screws in the upper right and left of the furnace. The top front access panel is then removed by pulling forward. Once the vent connections are made, the top front access panel is replace. Be sure the access panel fits the around the two grommets that secure the vent pipes and the rear tab locks below the top rear panel. For Energy Star models, adhesive backed aluminum tape has been provided to seal the access panel to the furnace top to make an air tight seal at

the conclusion of the vent pipe installation. This will insure a leak free return air compartment. Refer to Figure 6A.

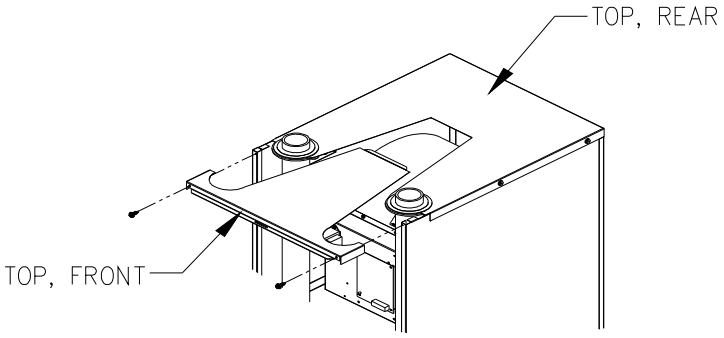


Figure 6A.

NOTICE: The exhaust vent pipe must be supported every 4 feet. After making sure the length of the piping is correct glue all connections in place.

⚠**WARNING***: This CMA/CMC furnace has been designed to be installed as a direct vent system and must have its combustion air brought in from outside the conditioned space. The failure to install the vent/air intake system as specified in these instructions will void the heat exchanger warranty and may result in property damage, personal injury or loss of life.*

NOTICE: The furnace model series CMA/CMC may be vented either through the sidewall or the roof. For sidewall instructions, continue to the following section. For roof venting, refer to Section IV J, of this manual.

NOTICE: The air intake pipe must be supported every 4 feet. After making sure the length of the piping is correct, glue all connections in place except the connection to the burner box.

If the combustion air piping is installed in a warm humid place, such as a laundry room or above a suspended ceiling, it must be insulated with a 1.0" foil faced insulation or its equivalent.

If the vent piping is run through an unconditioned space, it must be insulated with a 1.0" foil faced insulation or its equivalent.

⚠**CAUTION***: Outside combustion air must not come from an area that is directly adjacent to a pool, hot tub or spa. Measures should be taken to prevent the entry of corrosive chemicals or vapors to the combustion and ventilation air supply. Such chemicals include but are not limited to chlorinated and/or fluorinated hydrocarbons such as found in refrigerants, aerosol propellants, dry cleaning fluids, degreasers and removers. Other harmful compounds may come from bleaches, air fresheners or mastics. Vapors from such products can form acid compounds when burned in a*

gas flame. Should acid compounds form in your furnace, it may reduce the life of the furnace.

H. Direct Venting Through a Sidewall

1. Vent And Combustion Air Pipes

Vent and combustion air pipes may pass through a maximum wall thickness of 18 inches. The minimum wall thickness is 2 inches. Referring to Figure 7, the maximum distance from the outer wall to the center of the elbow is 12 inches.

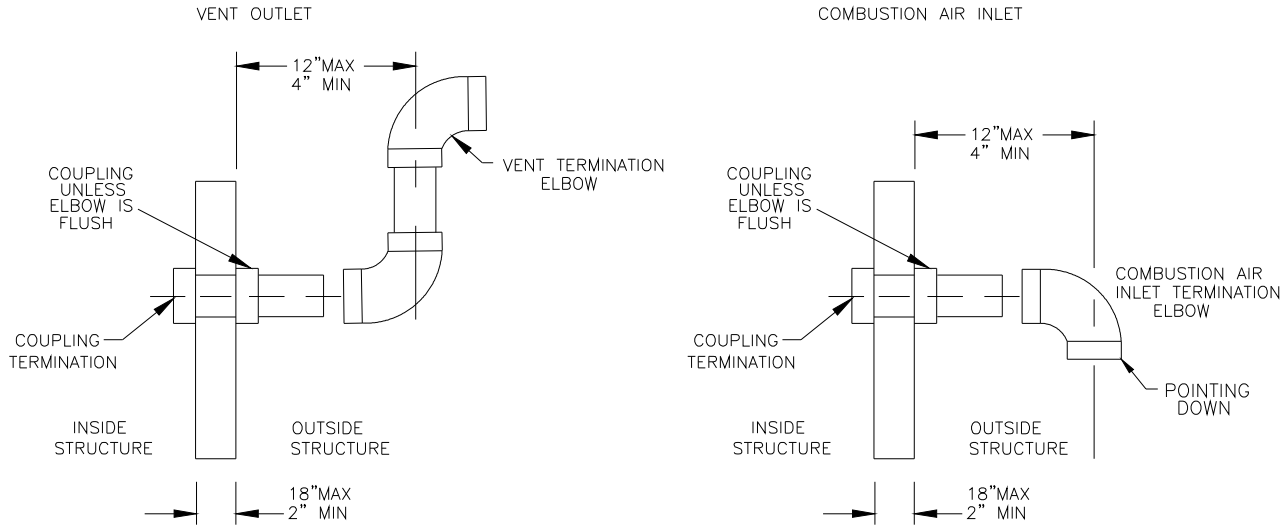


Figure 7: Proper Direct Vent Terminations (RH & LH views) and Vent Termination Only w/o Outside Combustion Air Intake (RH view)

NOTICE: If exterior sidewall building materials are subject to degradation from contact with flue gases or moisture, a minimum 24-inch diameter shield shall be fabricated from stainless steel or UV-resistant plastic sheet. The protective shield shall be installed around the vent pipe on the outside wall.

2. Exhaust Vent Termination Elbow

The exhaust vent termination elbow shall be installed in accordance with these instructions and any applicable local codes. Refer to Figures 7 and 8 for typical examples of proper terminations.

a. The exhaust vent termination must be installed in the same atmospheric pressure zone (i.e. on the same wall) as the air intake termination.

b. The bottom edge of the vent termination elbow must be installed at least 12-inches above the outlet of intake termination elbow.

c. The horizontal distance between the inlet and exhaust terminations should be minimized, when possible, and should never exceed 24-inches.

d. The vent and intake systems should utilize the same numbers of elbows and approximately the same length of straight pipe to reach the outside termination.

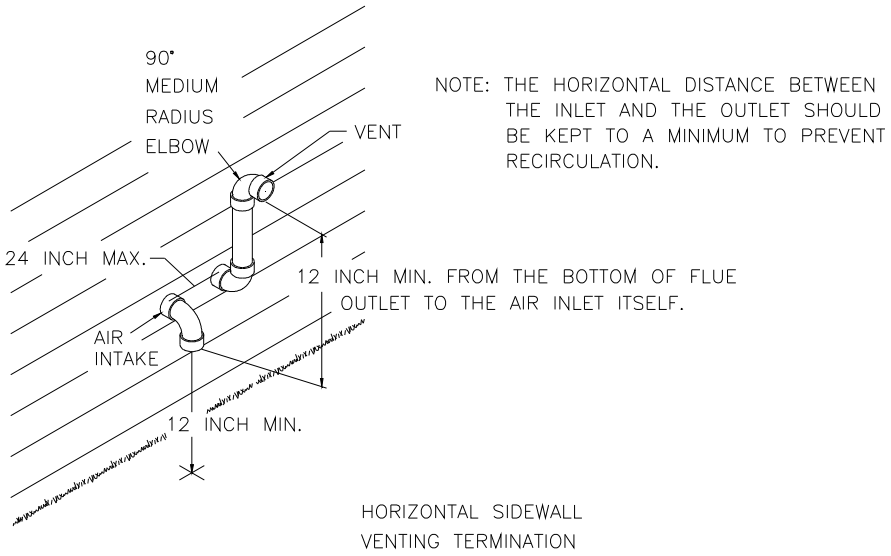


Figure 8: Typical Relative Locations of Direct Vent Terminations When Sidewall Venting

3. Exhaust Vent Terminal Location Clearance Requirements

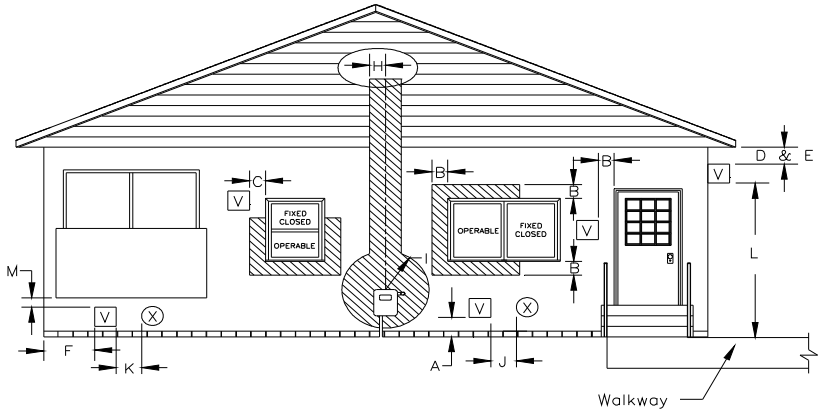
a. The vent terminal shall be located at least 3-feet above any forced air inlet located within 10-feet. Refer to Figure 9 for a depiction of the minimum required clearances between vent terminations and building features according to the National Fuel Gas Code (NFGC).

b. The vent terminal shall be at least 12-inches below, 12-inches horizontally from, or 12-inches above, any door, window, or gravity air inlet into a building. The bottom of the vent terminal shall be located at least 12-inches above grade.

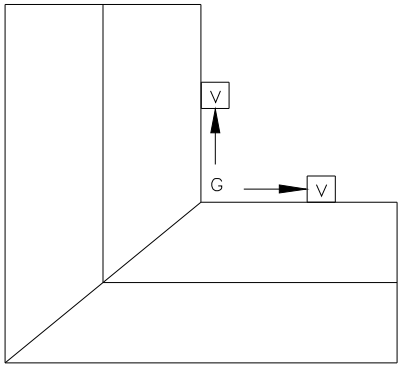
c. The vent terminal shall **not** be located:
- over public walkways or over an area where wetting of surfaces by condensate, or water vapor, could create a nuisance or hazard,
- near soffit vents, crawl space vents, or other areas where condensate or water vapor could create a nuisance, hazard, or cause property damage, and

- where wetting of components by condensate, or water vapor, could be detrimental to the operation of pressure regulators, relief valves, or any other equipment.

d. The vent terminal shall be installed a minimum of 14-inches from any obstruction and 3-feet from an inside corner of an L-shaped structure.



Front View of a Typical Single–Story House



Plan View of an "L"–Shaped House

LEGEND
V = Vent terminal
X = Air supply inlet
= Vent terminal installation prohibited within this region

Dimension	Clearance Definition	Requirement for US Installations*
A	Distance above grade, veranda, porch, deck, or balcany	12 inches
B	Distance to window or door that may be opened	12 inches **
C	Distance to permanently closed window	12 inches ***
D	Distance to ventillated soffit located above the terminal within a horizontal distance of 2 feet from the centerline of the terminal	24 inches ***
E	Distance to unventilated soffit	24 inches ***
F	Distance to outside corner	24 inches ***
G	Distance to inside corner	3 feet ***
H	Distance to each side of centerline extended above meter/regulator assembly	4 feet ***
I	Distance to service regulator vent outlet	4 feet ***
J	Distance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance	12 inches **
K	Distance to mechanical air supply inlet	3 feet above, if within 10 feet horizontally
L	Distance above paved sidewalk or paved driveway located on public property	7 feet ****
M	Distance below veranda, porch, deck, or balcany	24 inches ***

* In accordance with the current edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54.

** In non–direct vent applications (i.e. sidewall venting only), the required clearance is 4 feet below or to the side of the opening: 1 foot above opening.

*** Clearance in accordance with local installation codes, the requirements of the gas supplier, and the manufacturer's installation instructions.

**** In direct vent applications, clearance in accordance with local installation codes, the requirements of the gas supplier, and the manufacturer's installation instructions. In non–direct vent applications (i.e. sidewall venting only), the required clearance is 7 feet.

Figure 9: NFGC Minimum Clearances Between the Vent Terminal and Various Building Features

4. Vent Terminal Location Guidelines

⚠**CAUTION***: **Bushes, shrubs, or any vegetation that may restrict the flow of flue products must be kept away from vent and air intake terminations. Terminations must also be kept clear of any leaves, weeds, combustible materials, snow, and ice build-up. Avoid locating the vent terminal over areas where dripping of condensate, or small pools of acidic condensate, could create a problem.***

In addition to following any local code requirements, when possible, utilize the guidelines below in locating the vent terminal to help insure trouble-free operation of a sidewall vented furnace:

- Avoid locating the vent terminal on a wall facing prevailing winds and wide-open areas. When impractical, choose a location that protects the vent from strong winds, such as behind a fence or hedge.

- In geographical areas with considerable snowfall, it is advisable to locate the vent terminal much higher than the minimum 12-inches above ground to prevent blockage by snow accumulation or drifting.

- The vent and combustion air terminations shall be checked periodically, at least at the start of each heating season, for restriction or blockage from foreign material in the exhaust vent or in the air intake piping. Clean the air intake and vent terminations when necessary.

I. Installation Of Outside Exhaust / Intake Terminations

1. After determining appropriate installation locations (suitable locations must observe all clearances specified in this manual), mark and cut two (2), 2-3/8 inch diameter holes in the outside wall for the outdoor terminal(s)

2. Measure and cut two (2), 2-inch diameter thermoplastic pipes 1-1/2 inches longer than the depth of the wall. (Cutting the pipe longer leaves a ¾ inch connection allowance at both ends of the pipe.) Using PVC pipe cement, glue a PVC elbow or coupling fitting to one (1) end of each pipe.

Before inserting the pipe through the wall, mark the other end of the pipe so the elbow orientation can be determined. Also, if a protective shield (refer to Section H., passage 1. of this manual) will be used on the exterior surface of the wall, it should be installed at this time. From the inside, glue a coupling fitting to each pipe, using PVC pipe cement, while being careful to maintain the proper orientation of the termination elbow(s). Complete the assembly of the outlet and inlet as shown in Figure 10, making sure that the spacing between the inlet and outlet complies with that noted in Figure 8.

All installations and services must be performed by qualified service personnel.

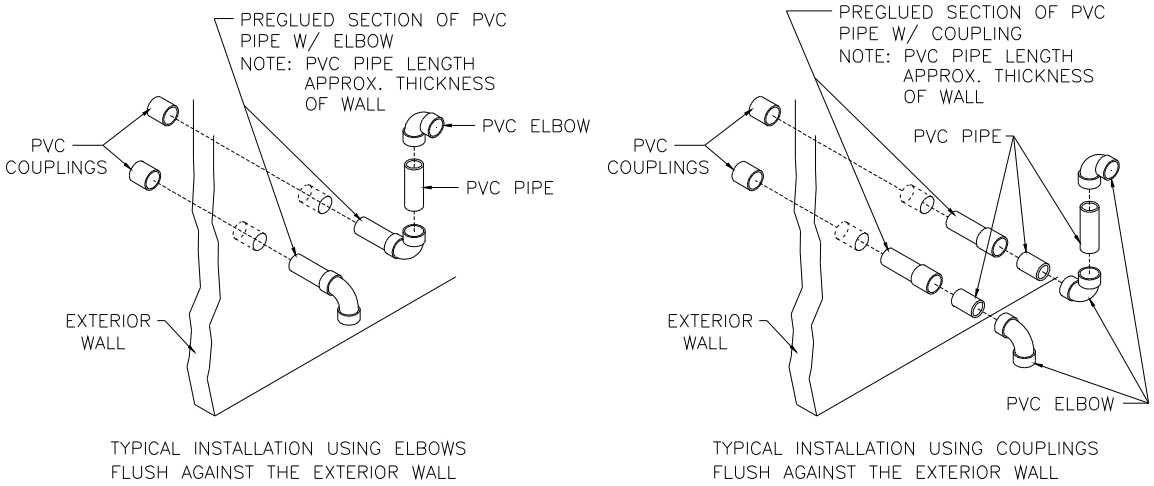

PREGLUED SECTION OF PVC PIPE W/ ELBOW
NOTE: PVC PIPE LENGTH APPROX. THICKNESS OF WALL
PVC ELBOW
PVC PIPE
PVC COUPLINGS
EXTERIOR WALL
TYPICAL INSTALLATION USING ELBOWS FLUSH AGAINST THE EXTERIOR WALL
PREGLUED SECTION OF PVC PIPE W/ COUPLING
NOTE: PVC PIPE LENGTH APPROX. THICKNESS OF WALL
PVC PIPE
PVC COUPLINGS
EXTERIOR WALL
PVC ELBOW
TYPICAL INSTALLATION USING COUPLINGS FLUSH AGAINST THE EXTERIOR WALL

Figure 10: Typical Construction Details of Sidewall Vent and Air Intake Terminations

3. Finish the vent installation by caulking the annulus to seal around the two (2) holes where the thermoplastic pipes pass through the wall.

4. To prevent foreign material, insects, or small animals from entering the pipes, an optional vent or intake terminal (stainless steel) screen is available from Thermo Products under part no. 320219.

J. CONNECTING THE FURNACE TO ROOF VENT / AIR TERMINATIONS

The CMA/CMC is designed to be vented with either a concentric vent assembly or twin 2" pvc stacks. The concentric vent (AOPS7483) can be vented through the ceiling/roof either thru the existing roof jack or thru the 3" ceiling/roof flashing plate.

<u>Concentric vent utilizing existing roof jack as a chase.</u>
Follow instructions included with concentric vent kit AOPS7483.

<u>Concentric vent without roof jack as a chase.</u>
Follow instructions included with concentric vent kit AOPS7483.

<u>Dual 2" vent/air termination kit AOPS7484</u>

1. Remove roof jack assembly.
2. Place a 2" (2-holes) ceiling/roof flashing plate to the ceiling centering it over existing hole.
3. Place second flashing plate on roof over existing hole.
4. Plate must be sealed to roof to ensure a weather proof seal.
5. Secure plate to roof.
6. Drop pvc pipes thru holes in flashing plates.
7. Secure with hose clamps to flashing plate.
8. Seal with silicone type caulk.

The furnace may be vented vertically through the roof. The outlet/inlet of the vent and air intake terminations shall be a minimum of 12 inches above highest anticipated snow level. The vent outlet must be installed a minimum of 12 in. above the air intake inlet. <u>The combustion air intake shall be installed upwind of the vent outlet when exposed to prevailing winds.</u> The exhaust vent and combustion air intake can be a minimum of 3 in. and a max. of 24 in. apart (see Figures 11 & 12). When installing dual 2" PVC pipes and the 2" flashing plates (AOPS7484) on pitched roof, slope adapter may be used to simplify installation.

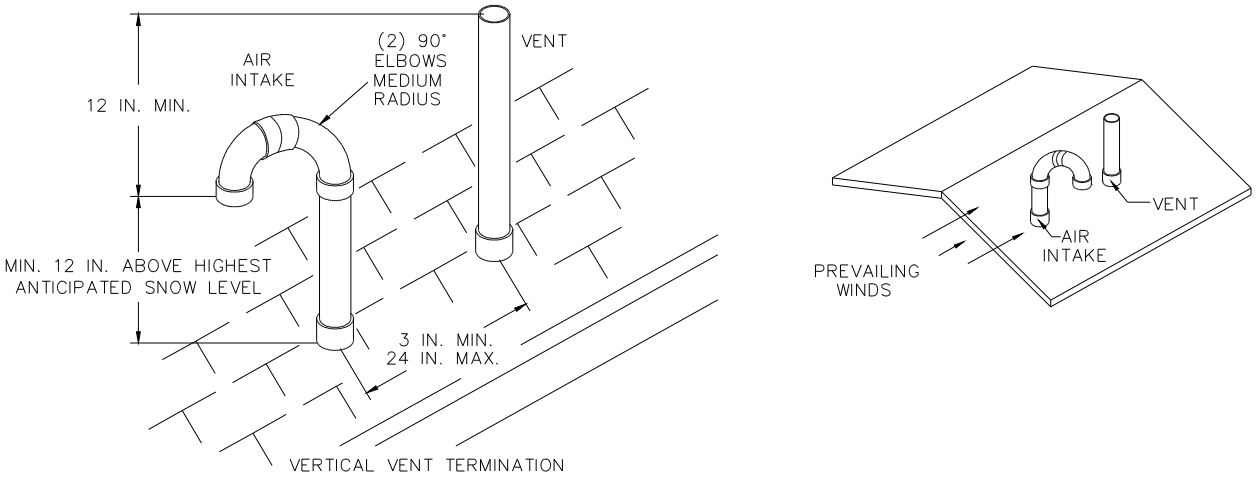


Figure 11.

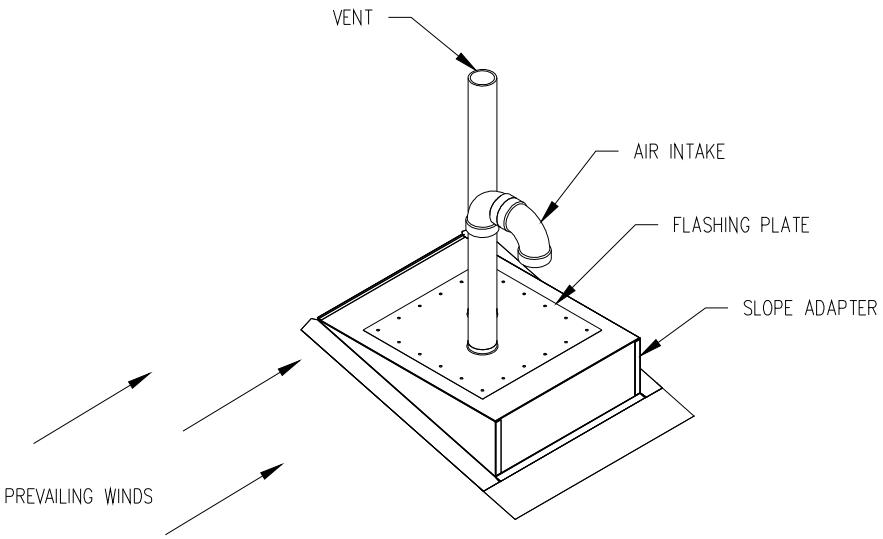


Figure 12.

When the PVC vent and combustion air intake pipes pass through a ceiling, and a fire stop is required. Refer to the following:

CEILING: Frame out area around where PVC pipe is to penetrate ceiling. Cut a 2-3/8" diameter hole for 2" PVC in the ceiling and a corresponding hole in a firestop to be made of a minimum of 18 gauge galvanized metal large enough to cover the entire framed area. Cut PVC pipe so that it extends up past the fire stop far enough to engage a PVC coupling that will rest on the fire stop and act as a support. Seal between the pipe coupling and fire stop with high temperature RTV silicone sealant (see Figure 13). Continue installing PVC pipe to exhaust vent and combustion air intake termination as described previously.

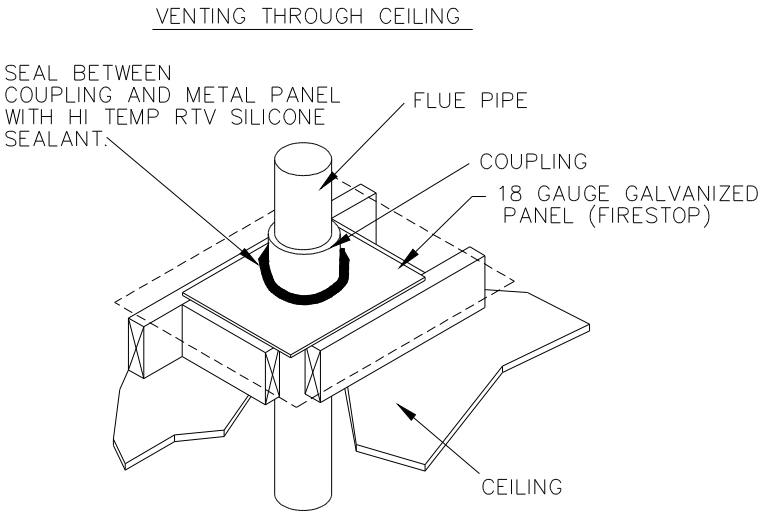

VENTING THROUGH CEILING
SEAL BETWEEN COUPLING AND METAL PANEL WITH HI TEMP RTV SILICONE SEALANT.
FLUE PIPE
COUPLING
18 GAUGE GALVANIZED PANEL (FIRESTOP)
CEILING

Figure 13.

K. CONDENSATE DRAIN LINE AND TRAP ASSEMBLY

1. Figure 14 illustrates the typical drain trap connection for a CMA/CMC furnace. (Trap will be installed at factory.) Connect condensate drain trap to building drain system.

2. An optional condensate neutralizer kit (P/n 320095) is available when gas furnace condensate needs to be neutralized (pH increased) prior to discharge into drain system.

3. An optional mini condensate pump (P/N 350224) is available. This pump will fit into the vestibule of the furnace. Instructions will be included with pump if this option is utilized.

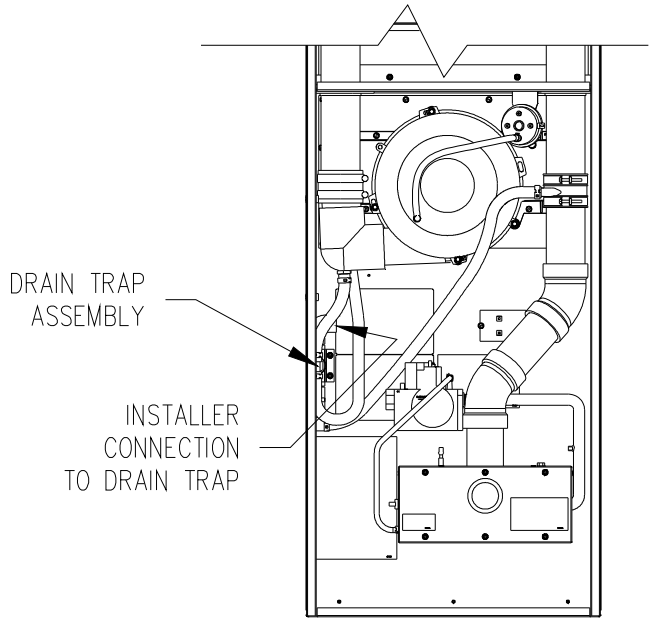


Figure 14.

L. ELECTRICAL WIRING

All wiring shall be performed by a qualified electrician or service person. The wiring must comply with local codes, the instructions in this manual, and in the absence of codes with the National Electrical Code ANSI/NFPA-70 (LATEST EDITION).

1. Electrical Branch Supply Circuit

Route all electrical wiring to the left side of the furnace. The power supply circuit to the furnace must be installed and grounded in accordance with the provisions of the National Electrical Code, ANSI/NFPA-70-1999, or latest edition, and all local codes having jurisdiction.

2. Connection Of Power Supply Wires

a. Remove the cover from junction box.
b. Insert 115 VAC wires through the strain relief bushing (or conduit connection as applicable) on the left side of the furnace junction box.
c. Connect the “hot” wire to the black wire.
d. Connect the “neutral” wire to the white wire.
e. Connect the “ground” wire to the green wire.
f. Reinstall and secure the junction box cover with the original mounting screws.

NOTICE: The hot surface igniter and operation of this furnace depends on correct polarity. The hot leg of the supply circuit must be connected to the **black** line lead (L1) and the common leg (L2) to the white line lead in the field mounted junction box. The hot leg must pass through the disconnect switch in all cases to prevent the hazard of electrical shock when servicing.

IMPORTANT: The furnace must be grounded in accordance with local codes and with the National Electrical Code, ANSI/NFPA NO. 70 (Latest Edition) when an external electrical source is utilized.

3. Connection Of Room Thermostat Wires

NOTE: Class 1 thermostat wire must be used inside the furnace burner compartment.

a. Insert 24 VAC wires through the plastic grommet on the left side of the furnace casing.
b. Connect the thermostat wires to the W/R 50A65-143 control (refer to the wiring diagram).
c. Connect the thermostat wires to the room thermostat.

IMPORTANT: The room thermostat should be installed 4 to 5 feet above the floor on an interior wall which is relatively free from direct sources of heat (sunlight or supply airflow) or exposure to cold (drafts from open windows and doors). The nominal anticipator setting is 0.8 amperes, for the CMA/CMC (refer to the thermostat literature for additional information).

Four-conductor thermostat wire is recommended for 24 VAC, low-voltage, control circuit wiring. However, only 2 wires are required for the furnace (a heating application only).

Electrical Wire Diameter (AWG)	Maximum Recommended Thermostat Wire Length (Feet)
24	55
22	90
20	140
18	225

Once the furnace is installed, check the thermostat anticipator for proper nominal setting.

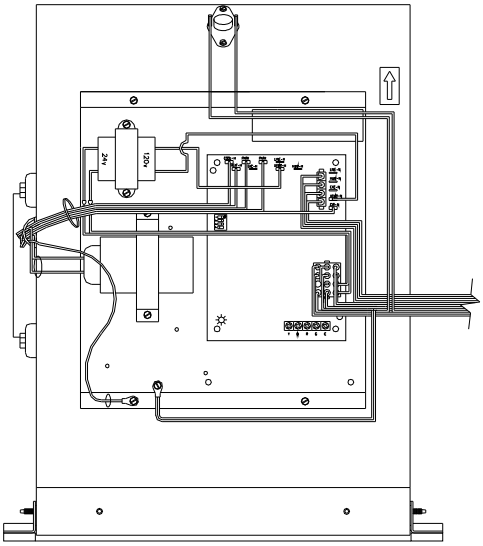
1. Connect a multimeter, capable of reading milliamps (mA), in series with the low voltage wires to the thermostat.
2. Increase the thermostat setting, or create a “call for heat”.
3. Read the value of the thermostat current, in milliamps.
4. Adjust the heat anticipator of the thermostat to the value read by the multimeter.

If the heat anticipator is set too high, the furnace may delay activation of a heating cycle for too long. If the heat anticipator is set too low, the furnace may cycle too frequently. Either condition may not provide optimal comfort to the homeowner.

All installations and services must be performed by qualified service personnel.

4. BLOWER MOTOR SPEED WIRING

CM**-D36N SERIES



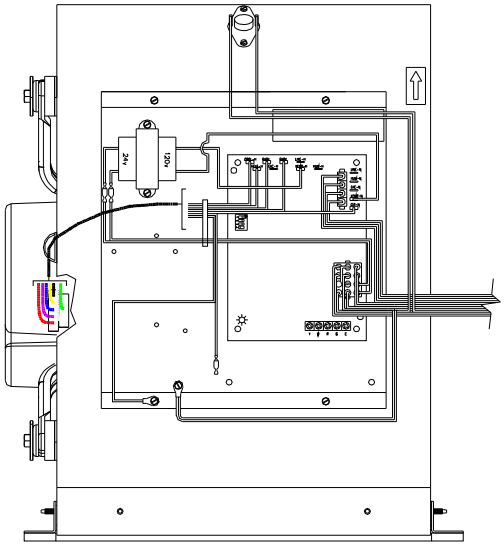
FACTORY WIRING CMA3-50D36N & CMC1-50D36N

MOTOR		CONTROL
LOW	(RED)	HEAT-H
MED-LOW	(BLUE)	PARK
MED-HIGH	(YELLOW)	PARK
HIGH	(BLACK)	COOL-H
COMMON	(WHITE)	CIR-N

FACTORY WIRING CMA3-75D36N & CMC1-75D36N

MOTOR		CONTROL
LOW	(RED)	PARK
MED-LOW	(BLUE)	HEAT-H
MED-HIGH	(YELLOW)	PARK
HIGH	(BLACK)	COOL-H
COMMON	(WHITE)	CIR-N

CM**-DV3N SERIES



FACTORY WIRING CMC1-50DV3N

MOTOR		CONTROL
LOW	(RED)	HEAT-H
MED-LOW	(PURPLE)	PARK
MED	(BLUE)	CAPPED
MED-HIGH	(YELLOW)	PARK
HIGH	(BLACK)	COOL-H
COMMON	(WHITE)	CIR-N

FACTORY WIRING CMC1-75DV3N

MOTOR		CONTROL
LOW	(RED)	HEAT-H
MED-LOW	(PURPLE)	PARK
MED	(BLUE)	CAPPED
MED-HIGH	(YELLOW)	PARK
HIGH	(BLACK)	COOL-H
COMMON	(WHITE)	CIR-N

Figure 15.

BLOWER DELAY SETTINGS

To delay fan turn-on by:	Set Switch #1	#2
15 sec.	Off	Off
30 sec.	Off	On
45 sec.	On	Off
* 60 sec.	On	On

To delay fan turn-off by:	Set Switch #3	#4
60 sec.	On	On
90 sec.	Off	On
*120 sec.	On	Off
180 sec.	Off	Off

*Factory Settings For Optimal Performance

All installations and services must be performed by qualified service personnel.

CMA3-50D36

ALTERATIONS REQ'D FOR A/C @ DESIGN EXTERNAL STATIC PRESSURE		
COOLING UNIT	HTG Speed	Recommended CLG Speed
24,000	LOW	MED-LOW
30,000	LOW	MED-HIGH
36,000	LOW	HIGH

Speed Tap \ Static Pressure	Furnace Airflow (CFM) vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	836	805	773	743	695	620	566
ML	1044	1010	972	914	860	826	752
MH	1250	1196	1146	1101	1038	977	902
High	1339	1338	1283	1233	1162	1086	1008

Speed Tap \ Static Pressure	Temperature Rise vs. External Static Pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	53	55	57	59	63	71	78
ML	42	44	45	48	51	53	59
MH	35	37	38	40	42	45	49
High	31	33	34	36	38	41	44

Speed Tap \ Static Pressure	Blower Motor Current Draw (Amps) vs. External Static pressure (in. WC.)						
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**
Low	3.3	3.2	3.1	3.0	2.9	2.7	2.6
ML	4.0	3.8	3.6	3.5	3.4	3.2	3.1
MH	4.6	4.4	4.2	4.1	4.0	3.8	3.6
High	5.3	5.1	5.0	4.9	4.7	4.6	4.4

Speed Tap \ Static Pressure	Blower Motor Watts vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	315	311	304	300	292	281	275
ML	400	390	376	363	351	342	330
MH	485	467	452	441	427	412	394
High	573	555	544	530	513	493	477

= Recommended operation range

All installations and services must be performed by qualified service personnel.

CMA3-75D36

ALTERATIONS REQ'D FOR A/C @ DESIGN EXTERNAL STATIC PRESSURE		
COOLING UNIT	HTG Speed	Recommended CLG Speed
24,000	MED-LOW	MED-LOW
30,000	MED-LOW	MED-HIGH
36,000	MED-LOW	HIGH

Speed Tap \ Static Pressure	Furnace Airflow (CFM) vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	817	797	773	730	668	620	555
ML	1019	995	959	918	869	821	760
MH	1257	1210	1174	1125	1076	1024	959
High	1470	1420	1366	1312	1259	1196	1127

Speed Tap \ Static Pressure	Temperature Rise vs. External Static Pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	81	83	85	90	90	106	119
ML	65	66	69	72	76	80	87
MH	52	55	56	59	61	64	69
High	45	46	48	50	52	55	59

Speed Tap \ Static Pressure	Blower Motor Current Draw (Amps) vs. External Static pressure (in. WC.)						
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**
Low	3.1	3.0	2.9	2.8	2.7	2.6	2.5
ML	3.9	3.8	3.6	3.5	3.3	3.2	3.1
MH	4.8	4.6	4.4	4.2	4.1	4.0	3.8
High	5.7	5.5	5.4	5.2	5.1	5.0	4.8

Speed Tap \ Static Pressure	Blower Motor Watts vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	312	303	298	291	280	273	264
ML	400	390	381	366	354	342	330
MH	513	490	478	462	447	432	413
High	624	605	591	573	556	542	522

= Recommended operation range

All installations and services must be performed by qualified service personnel.

CMC1-50D36

ALTERATIONS REQ'D FOR A/C @ DESIGN EXTERNAL STATIC PRESSURE		
COOLING UNIT	HTG Speed	Recommended CLG Speed
24,000	LOW	MED-LOW
30,000	LOW	MED-HIGH
36,000	LOW	HIGH

Speed Tap \ Static Pressure	Furnace Airflow (CFM) vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	836	805	773	743	695	620	566
ML	1044	1010	972	914	860	826	752
MH	1250	1196	1146	1101	1038	977	902
High	1339	1338	1283	1233	1162	1086	1008

Speed Tap \ Static Pressure	Temperature Rise vs. External Static Pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	53	55	57	59	63	71	78
ML	42	44	45	48	51	53	59
MH	35	37	38	40	42	45	49
High	31	33	34	36	38	41	44

Speed Tap \ Static Pressure	Blower Motor Current Draw (Amps) vs. External Static pressure (in. WC.)						
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**
Low	3.3	3.2	3.1	3.0	2.9	2.7	2.6
ML	4.0	3.8	3.6	3.5	3.4	3.2	3.1
MH	4.6	4.4	4.2	4.1	4.0	3.8	3.6
High	5.3	5.1	5.0	4.9	4.7	4.6	4.4

Speed Tap \ Static Pressure	Blower Motor Watts vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	315	311	304	300	292	281	275
ML	400	390	376	363	351	342	330
MH	485	467	452	441	427	412	394
High	573	555	544	530	513	493	477

= Recommended operation range

All installations and services must be performed by qualified service personnel.

CMC1-75D36

ALTERATIONS REQ'D FOR A/C @ DESIGN EXTERNAL STATIC PRESSURE		
COOLING UNIT	HTG Speed	Recommended CLG Speed
24,000	MED-LOW	MED-LOW
30,000	MED-LOW	MED-HIGH
36,000	MED-LOW	HIGH

Speed Tap \ Static Pressure	Furnace Airflow (CFM) vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	817	797	773	730	668	620	555
ML	1019	995	959	918	869	821	760
MH	1257	1210	1174	1125	1076	1024	959
High	1470	1420	1366	1312	1259	1196	1127

Speed Tap \ Static Pressure	Temperature Rise vs. External Static Pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	81	83	85	90	90	106	119
ML	65	66	69	72	76	80	87
MH	52	55	56	59	61	64	69
High	45	46	48	50	52	55	59

Speed Tap \ Static Pressure	Blower Motor Current Draw (Amps) vs. External Static pressure (in. WC.)						
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**
Low	3.1	3.0	2.9	2.8	2.7	2.6	2.5
ML	3.9	3.8	3.6	3.5	3.3	3.2	3.1
MH	4.8	4.6	4.4	4.2	4.1	4.0	3.8
High	5.7	5.5	5.4	5.2	5.1	5.0	4.8

Speed Tap \ Static Pressure	Blower Motor Watts vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	312	303	298	291	280	273	264
ML	400	390	381	366	354	342	330
MH	513	490	478	462	447	432	413
High	624	605	591	573	556	542	522

= Recommended operation range

All installations and services must be performed by qualified service personnel.

CMC1-50DV3

ALTERATIONS REQ'D FOR A/C @ DESIGN EXTERNAL STATIC PRESSURE		
COOLING UNIT	HTG Speed	Recommended CLG Speed
24,000	LOW	MED-LOW
30,000	LOW	MED-HIGH
36,000	LOW	HIGH

Speed Tap \ Static Pressure	Furnace Airflow (CFM) vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	700	639	567	497	437	387	332
ML	876	834	781	725	653	602	556
MED	990	948	907	857	811	756	700
MH	1174	1145	1107	1066	1026	987	942
High	1398	1365	1326	1299	1265	1252	1190

Speed Tap \ Static Pressure	Temperature Rise vs. External Static Pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	63	69	78	88	101	114	132
ML	50	53	56	61	67	73	79
MED	44	46	48	51	54	58	63
MH	37	38	40	41	43	45	47
High	31	32	33	34	35	35	37

Speed Tap \ Static Pressure	Blower Motor Current Draw (Amps) vs. External Static pressure (in. WC.)						
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**
Low	1.1	1.1	1.2	1.2	1.2	1.3	1.4
ML	1.7	1.7	1.8	1.8	1.9	1.9	2.0
MED	2.2	2.2	2.3	2.4	2.5	2.5	2.5
MH	3.4	3.4	3.4	3.5	3.6	3.6	3.7
High	5.2	5.2	5.2	5.3	5.3	5.4	5.5

Speed Tap \ Static Pressure	Blower Motor Watts vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	72	77	81	84	87	91	95
ML	123	127	133	137	141	145	148
MED	168	173	178	183	188	192	197
MH	266	272	277	284	290	296	301
High	438	442	445	450	455	461	468

= Recommended operation range

All installations and services must be performed by qualified service personnel.

CMC1-75DV3

ALTERATIONS REQ'D FOR A/C @ DESIGN EXTERNAL STATIC PRESSURE		
COOLING UNIT	HTG Speed	Recommended CLG Speed
24,000	MED-LOW	MED-LOW
30,000	MED-LOW	MED-HIGH
36,000	MED-LOW	HIGH

Speed Tap \ Static Pressure	Furnace Airflow (CFM) vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	970	935	898	846	802	765	710
ML	1043	998	968	928	880	830	785
MED	1148	1113	1080	1051	1007	968	929
MH	1212	1177	1142	1119	1083	1047	1023
High	1300	1272	1229	1211	1177	1144	1117

Speed Tap \ Static Pressure	Temperature Rise vs. External Static Pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	75	78	81	86	91	96	103
ML	70	73	76	79	83	88	93
MED	64	66	68	70	73	76	79
MH	60	62	64	65	67	70	71
High	56	57	59	60	62	64	65

Speed Tap \ Static Pressure	Blower Motor Current Draw (Amps) vs. External Static pressure (in. WC.)						
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**
Low	2.4	2.5	2.5	2.6	2.6	2.7	2.7
ML	2.8	2.9	3.0	3.0	3.1	3.1	3.2
MED	3.6	3.7	3.7	3.8	3.8	3.9	3.9
MH	4.2	4.2	4.3	4.3	4.4	4.5	4.5
High	4.8	4.9	5.0	5.0	5.1	5.2	5.2

Speed Tap \ Static Pressure	Blower Motor Watts vs. External Static pressure (in. WC.)						
	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Low	187	190	195	200	204	206	211
ML	225	229	233	238	244	248	252
MED	290	295	299	303	310	315	320
MH	341	347	353	356	364	369	371
High	408	414	423	428	435	441	445

= Recommended operation range

⚠WARNING: TURN OFF THE ELECTRICAL POWER to the furnace before attempting to change blower speed wiring.

The furnace is factory wired to the ignition control with standard heating and cooling speeds. When changing motor speeds, simply switch the needed speed to either the heating or cooling terminal as applicable on the module to obtain the desired CFM. The unused speeds should then be reconnected to the module in the “park” positions. (Refer to figure 15) Refer to section II for blower speed and air flow performance for A/C installation.

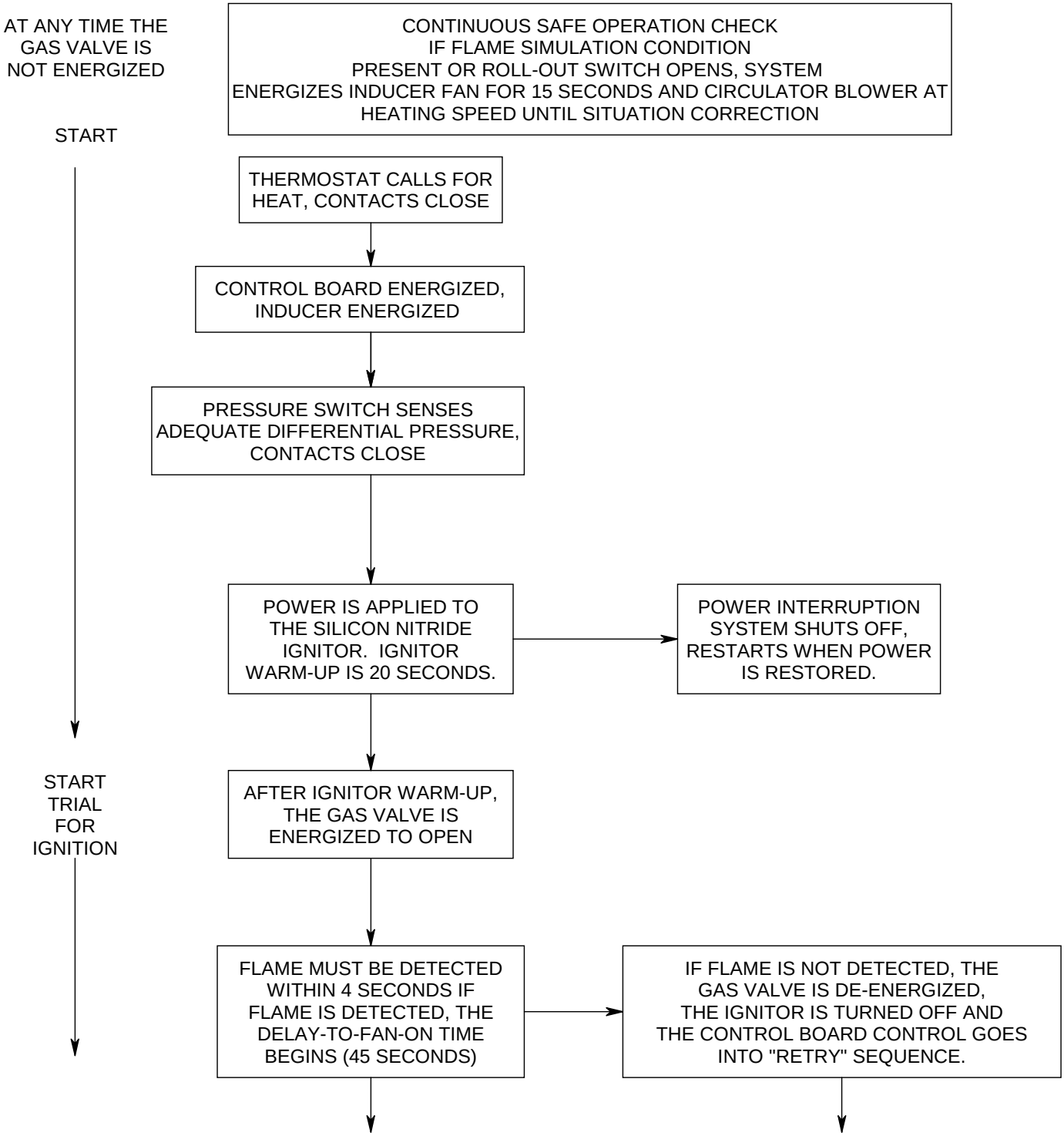
5. FIELD WIRING AND REPLACING WIRING

Field wiring between the furnace and devices not attached to the furnace shall conform with the temperature limitation for Type T 35 C wire. If any of the original factory supplied furnace wiring is replaced or a separate device other than the thermostat is wired internal to the unit 105°C thermoplastic or equivalent wire must be used.

All installations and services must be performed by qualified service personnel.

V. STARTING THE UNIT

A. SEQUENCE OF OPERATIONS


AT ANY TIME THE GAS VALVE IS NOT ENERGIZED
CONTINUOUS SAFE OPERATION CHECK IF FLAME SIMULATION CONDITION PRESENT OR ROLL-OUT SWITCH OPENS, SYSTEM ENERGIZES INDUCER FAN FOR 15 SECONDS AND CIRCULATOR BLOWER AT HEATING SPEED UNTIL SITUATION CORRECTION
START
THERMOSTAT CALLS FOR HEAT, CONTACTS CLOSE
CONTROL BOARD ENERGIZED, INDUCER ENERGIZED
PRESSURE SWITCH SENSES ADEQUATE DIFFERENTIAL PRESSURE, CONTACTS CLOSE
POWER IS APPLIED TO THE SILICON NITRIDE IGNITOR. IGNITOR WARM-UP IS 20 SECONDS.
POWER INTERRUPTION SYSTEM SHUTS OFF, RESTARTS WHEN POWER IS RESTORED.
START TRIAL FOR IGNITION
AFTER IGNITOR WARM-UP, THE GAS VALVE IS ENERGIZED TO OPEN
FLAME MUST BE DETECTED WITHIN 4 SECONDS IF FLAME IS DETECTED, THE DELAY-TO-FAN-ON TIME BEGINS (45 SECONDS)
IF FLAME IS NOT DETECTED, THE GAS VALVE IS DE-ENERGIZED, THE IGNITOR IS TURNED OFF AND THE CONTROL BOARD CONTROL GOES INTO "RETRY" SEQUENCE.

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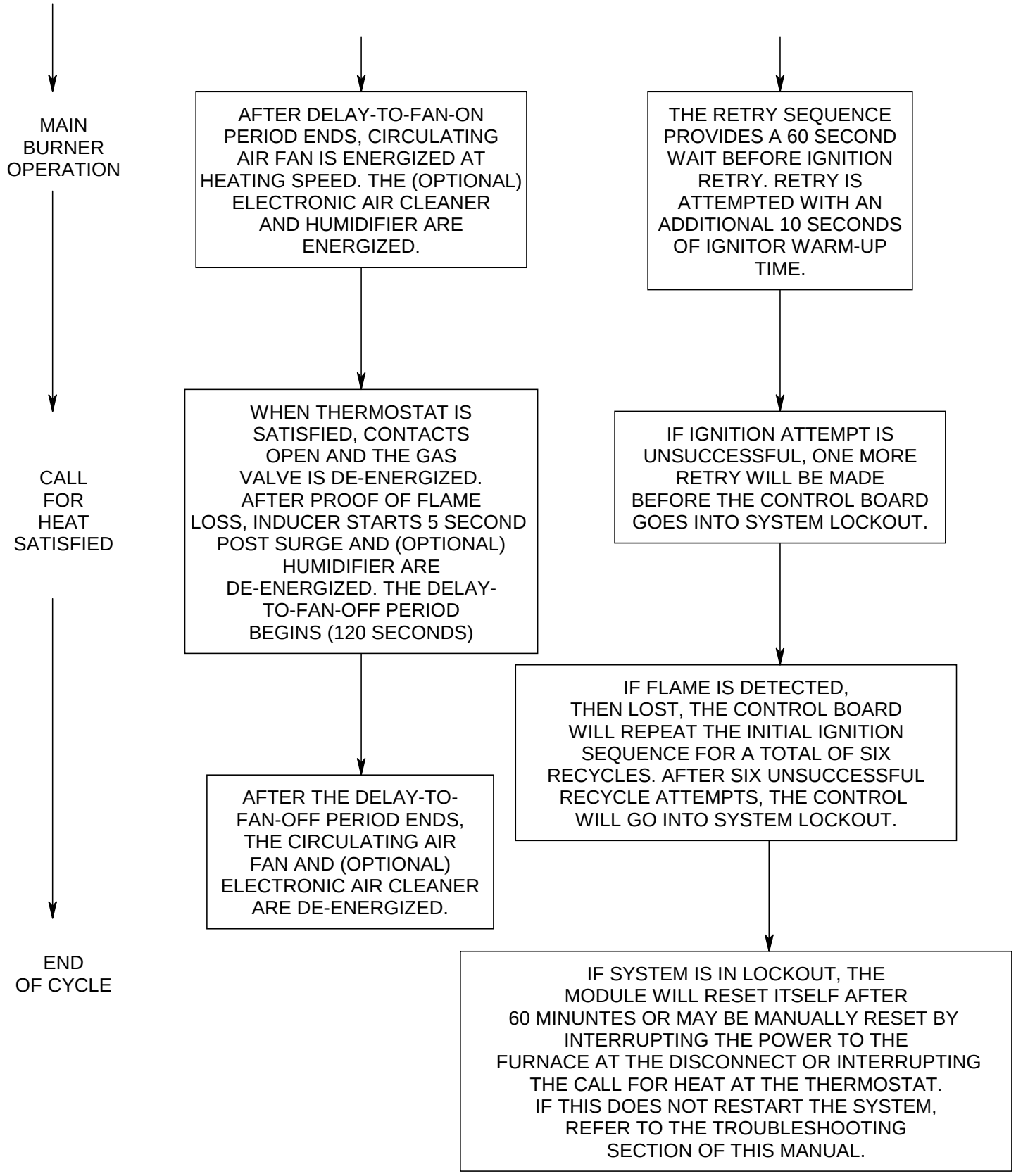

MAIN BURNER OPERATION
AFTER DELAY-TO-FAN-ON PERIOD ENDS, CIRCULATING AIR FAN IS ENERGIZED AT HEATING SPEED. THE (OPTIONAL) ELECTRONIC AIR CLEANER AND HUMIDIFIER ARE ENERGIZED.
THE RETRY SEQUENCE PROVIDES A 60 SECOND WAIT BEFORE IGNITION RETRY. RETRY IS ATTEMPTED WITH AN ADDITIONAL 10 SECONDS OF IGNITOR WARM-UP TIME.
CALL FOR HEAT SATISFIED
WHEN THERMOSTAT IS SATISFIED, CONTACTS OPEN AND THE GAS VALVE IS DE-ENERGIZED. AFTER PROOF OF FLAME LOSS, INDUCER STARTS 5 SECOND POST SURGE AND (OPTIONAL) HUMIDIFIER ARE DE-ENERGIZED. THE DELAY-TO-FAN-OFF PERIOD BEGINS (120 SECONDS)
IF IGNITION ATTEMPT IS UNSUCCESSFUL, ONE MORE RETRY WILL BE MADE BEFORE THE CONTROL BOARD GOES INTO SYSTEM LOCKOUT.
IF FLAME IS DETECTED, THEN LOST, THE CONTROL BOARD WILL REPEAT THE INITIAL IGNITION SEQUENCE FOR A TOTAL OF SIX RECYCLES. AFTER SIX UNSUCCESSFUL RECYCLE ATTEMPTS, THE CONTROL WILL GO INTO SYSTEM LOCKOUT.
AFTER THE DELAY-TO-FAN-OFF PERIOD ENDS, THE CIRCULATING AIR FAN AND (OPTIONAL) ELECTRONIC AIR CLEANER ARE DE-ENERGIZED.
END OF CYCLE
IF SYSTEM IS IN LOCKOUT, THE MODULE WILL RESET ITSELF AFTER 60 MINUNTES OR MAY BE MANUALLY RESET BY INTERRUPTING THE POWER TO THE FURNACE AT THE DISCONNECT OR INTERRUPTING THE CALL FOR HEAT AT THE THERMOSTAT. IF THIS DOES NOT RESTART THE SYSTEM, REFER TO THE TROUBLESHOOTING SECTION OF THIS MANUAL.

B. INITIAL START UP:

This furnace does not have a pilot. It is equipped with a hot surface igniter which automatically lights the burner. Do not attempt to light the burner by hand. Check the following items before the initial start-up.

1. Check all wiring for loose connections and proper hook up.
2. Leak test gas piping connections.
3. Check all tubing to the pressure switch and drains to make sure they are connected firmly at all their connection points.
4. Check flue pipe, combustion air inlet and all pvc connections for tightness and to make sure there is no blockage.
5. Make sure air filter is in place.
6. Make sure the outside vent and air intakes are installed according to instructions and that they are free from blockage.
7. Make sure that the drain trap is properly connected to the furnace and to the drain system.

OPERATING INSTRUCTIONS:

⚠**WARNING***: Turn off power to furnace before it is placed into service. The gas piping system must have been leak tested by a qualified heating contractor in accordance with State, Local and National Codes including the National Fuel Gas Code NFPA 54/ANSI-Z233.1 (Latest Edition).*

⚠**WARNING***: It may be necessary to purge the air out of the gas line for initial start-up of the furnace after installation. This should be done by a qualified heating contractor. If excessive gas escapes when purging the gas supply at the union, allow the area to ventilate for at least 15 minutes before attempting to start the furnace. LP gas is especially dangerous because the specific gravity of LP gas allows it to accumulate at floor level at a dangerous concentration.*

⚠**WARNING***: Heat exchanger oil will burn off on initial firing creating an unpleasant odor. To prevent this odor from occurring more than once, it is suggested that:*

1. A window(s) be opened.
2. The thermostat set at highest setting.
3. The furnace remain running as noted above for 15 minutes or until odor has dissipated.

C. ADJUSTMENT OF BTU INPUT RATE:

The orifice for this furnace was sized: 1) for natural gas having a heating value of 1025 BTU per cubic foot and a specific gravity of .65, or 2) for liquefied propane gas with a heating value of 2500 BTU per cubic foot and a specific gravity of 1.55. The information plate inside the furnace vestibule will specify which gas your furnace is orificed for. If the furnace is installed at an altitude that is more than 2,000 feet above sea level, it is mandatory that the input to the burner be reduced 4.0% for every 1,000 feet that it is above sea level. If the furnace is installed at an elevation of 5,000 feet, its input must be reduced 20.0%. Example: a furnace rated at 75,000 BTU at sea level must be reduced to a firing rate of 60,000 (75,000 x .80 = 60,000) at an elevation of 5,000 feet. If the furnace is installed at an elevation of 2,000 feet or less, no reduction in input is required. Your gas supplier or Thermo Products will supply you with the correct orifice sizing information.

To check the input of your natural gas furnace, allow the unit to operate for 10 to 15 minutes and proceed as follows:

1. Call your gas supplier and ask for the BTU content (heating value) of one cubic foot of the gas, supplied to the installation area. An alternate approach is to assume a value of 1025 BTU/Cu Ft which is the national average.

2. With all other gas appliances turned off and using a stopwatch, clock the time required for the (small) dial on the gas meter to make one full revolution. The meter dial will state the cubic feet of flow for one revolution usually one, two or five.

FORMULA: $\frac{\text{BTU/Cu Ft x Number of Cu Ft x 3600 Seconds}}{\text{Seconds for one revolution}}$ = Input BTU/hr

EXAMPLE: $\frac{\text{1025 BTU/Cu Ft x 2 Cu Ft x 3600}}{\text{100.40 Seconds}}$ = 73,505 BTU Input

Check the model number of the furnace, the input rate, the type of gas, and the manifold pressure on the rating label located in the burner vestibule. If using the above example, the furnace is a CMA2-75N model and the input rate is 73,505 BTU/hr. The input rate would be acceptable because it was within $\pm$ 2% of the listed input of 75,000.

3. Make sure that the gas supply pressure to the furnace is within the allowable range of 5.5" to 14" WC pressure on natural gas and 11.0" to 14.0" WC on propane gas. The pressure to the furnace must be checked while the furnace burner and any other gas appliances on the same supply system are operating, using the 1/8 in. NPT manifold pressure tap.

GAS PRESSURE CHART FOR CMA*/CMC* MODEL FURNACES

	SUPPLY PRESSURE	MANIFOLD PRESSURE
NAT	MAX 14" WC MIN 4.5" WC	3.5 ± .3" WC
PROPANE	MAX 14" WC MIN 11" WC	10.0" ± .3" WC

TABLE 3

This gas furnace is equipped with a fixed orifice sized for the manifold pressure shown on the rating label. The input can only be increased, or decreased, by adjusting the manifold pressure. Remove the 1/8" threaded pipe plug located on the gas manifold.

Use a U tube manometer or recently calibrated pressure gage to measure the pressure. To adjust the pressure, remove the screw cap from the regulator on the gas valve and using the adjustment screw. Decrease the pressure by turning the screw counterclockwise or increase it by turning the screw clockwise.

⚠**CAUTION:** ADJUSTMENTS TO THE LISTED PRESSURE MUST NOT EXCEED 0.3" WC. A 0.3" WC adjustment will increase or decrease the input approximately 4.0%.

Replace screw (cap) when adjustment is complete.
The correct input can be assumed if the furnace manifold pressure is the same as that shown on the rating label if a gas meter is not available for natural gas or the unit is installed on an unmetered propane gas supply.
Shut off the gas supply to the furnace. Remove the pressure gage and re-install the pipe plug using a thread compound resistant to the action of LP gases.
If the rated input cannot be obtained with the present orifice at the correct pressure, your local gas supplier may assist in sizing the proper orifice. Thermo Products Engineering Department will gladly assist in sizing the orifice if you provide them with the heating value in BTU per cubic foot and the specific gravity of the fuel gas.

D. BURNER ADJUSTMENT

This unit is designed to not require any burner adjustment. The flames should be checked by looking through the sight glass located on the burner box. Burner flames should be clear, blue and almost transparent in color. (see Figure 16).
NOTE: It is not unusual to have orangish flames visible in the tube for LP gas.

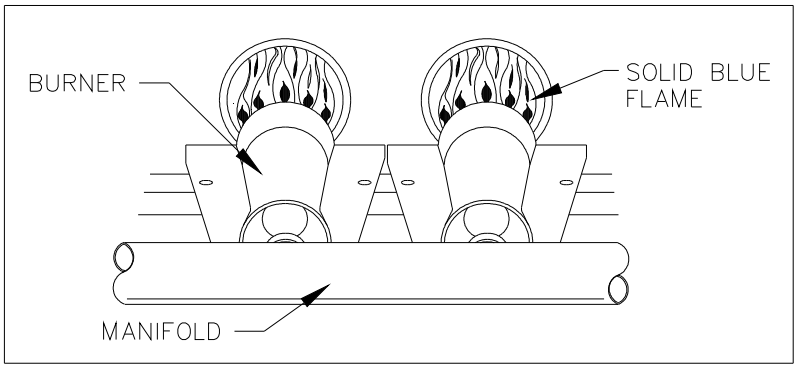


Figure 16.

⚠CAUTION: The CMA/CMC furnace models are direct vent design and do not require an air shutter adjustment (air shutters are not used) for proper flame characteristics. Burner box access cover must always be secured with all screws in place and tightened before operating furnace.

E. SETTING TEMPERATURE RISE

All CMA/CMC Models are designed and wired at the factory for a heating blower speed that should result in an approximate temperature rise of 55°F for CM**50's and 65°F for CM**75's. The blower motors are wired on med-low speed for heating mode. The temperature rise through the furnace may vary depending on the duct system, elevation, heating value, etc. for each installation. A lower temperature rise will result in a higher efficiency. Temperature rise = supply air temperature - return air temperature.
After 10 to 15 minutes of continuous operation, the temperature rise through the furnace must fall within a range of 40°F to 70°F for CM**50's and 50°F to 80°F for CM**75's. If the outlet or supply duct temperature is too high, you should check to make sure that your return air filter is clean, your return air openings are free from obstruction, your outlet registers are properly adjusted and clear and your supply and return air ducts are open.

The circulating air blower is not moving enough air if the supply air temperature is still too high. Before proceeding further, turn off the power supply to the furnace and remove the front door of the unit.

The speed of the blower must be increased by changing the speed tap from the motor (see figure 15). This is accomplished by locating the control panel attached to the blower housing and switching blower lead connected to the "Heat" terminal on the White-Rodgers 50A65-143 control, with one of the higher speed blower leads attached to a terminal marked "Park". Be sure to attach any unused blower leads to a terminal marked "Park". Replace the blower door and turn on the power supply.

F. FURNACE CHECKOUT PROCEDURE

Before any system of gas piping is finally put into service, it shall be carefully tested to assure that it is gas tight as indicated in the Fuel Piping Section of this Furnace Manual.

NOTICE: All controls on the unit should be checked for proper functioning prior to the qualified service personnel leaving the job site. Specifically the following should be checked:

With furnace in normal heating operation, check to make certain blower will start and stop automatically under control of integrated fan control.

1. Check safety limit control as follows:
   a. Shut off incoming power.
   b. Block return air opening or disconnect blower motor leads.
   c. Restore power to furnace.
   d. Set thermostat above room temperature calling for heat.
   e. When temperatures are reached in furnace at limit control setting with blower out of operation, burner should shut off.
   f. Shut off electrical power.

IMPORTANT: Remove blockage or reconnect blower motor and restore power.

2. Make certain thermostat will automatically start and stop furnace.

3. Block the flue pipe outlet gradually with a flat piece of metal, until the pressure switch functions shutting off the main burners. **IMPORTANT:** Remove flue outlet blockage when done.

4. Block the PVC pipe inlet gradually with a flat piece of metal until pressure switch functions shutting off the main burners. **IMPORTANT:** Remove air inlet blockage when done.

5. Remove the blower compartment access door with the furnace operating. The door interrupt switch is in the 120 volt circuit and will shut down the entire system. Replace the blower door and the furnace start-up cycle will begin.

VI. INSTALLER'S INSTRUCTIONS TO USER:

After completing the installation, the installer shall inform and/or demonstrate to the homeowner:

1. The location of all the instructions in the furnace and that the instructions must be kept along with instructions for any accessories in the plastic pouch.

2. The location and use of the manual gas shut off valve and furnace electrical disconnect switch. Instruct user to always shut off gas before shutting off electric power.

3. The sequence of operation of the furnace.

4. The correct operation and maintenance of the appliance as outlined in this manual.

5. That failure to maintain and operate this furnace in accordance with these instructions could result in hazardous conditions, bodily injury, property damage and may void the limited warranty on the furnace.

6. Review with and encourage the user to read the label reproductions and all warnings and instructions in this manual.

7. Recommend that the user have a qualified heating contractor inspect the furnace at the start of each heating season. Inform the user of the frequency of inspection required for each component.

8. Should the furnace not operate after installation – note diagnostic code through view port prior to removing door.

VII. DEALER MAINTENANCE

The following maintenance procedures should be performed at the beginning of each heating season by a qualified heating contractor. Correct any deficiencies at once.

⚠WARNING: Personal injury or property damage could result from repair or service of this furnace by anyone other than a qualified heating contractor.

⚠WARNING: To avoid injury from moving parts, shut off the power to the furnace before removing blower compartment door.

All installations and services must be performed by qualified service personnel.

⚠CAUTION: Label wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

A. ELECTRICAL:

1. Check diagnostic code through view port prior to removing access door.
2. Check all wiring for loose connections and any signs of damage or unusual wear.
3. Check for correct voltage at the furnace when operating.
4. Check amp-draw on blower motor and inducer motor to assure they are not exceeding name plate amp rating.
5. Check for correct operation and proper settings (if manually adjustable) of all controls.

Shut off gas and disconnect power before continuing.

B. GENERAL INSPECTION

1. VENT PIPE COMBUSTION AIR INTAKE

a. Remove the vent and check the vent for signs of carbon build-up and for signs of blockage.

b. The entire length of vent and combustion air inlet pipe and their terminations should be inspected for restrictions, loose or loosely sealed joints, carbon build-up. Also inspect the outside vent and combustion air terminals and ensure that they are clear and unobstructed.

2. CONDENSATE LINE/TRAP ASSEMBLY

The condensate line must be inspected to make sure it is not blocked. All of the lines should be flushed with water to remove any build-up of sediment.

3. BURNERS

If it appears that material is accumulating in the burner box, the burner box cover can be removed and the box and burners can be vacuumed. (NOTE: The igniter & flame sensor must be removed before removing the assembly.) If necessary, the burner assembly can be removed by taking out the two screws/one on each bracket at the bottom of the box. Assembly must be pulled & tilted away from the burner compartment in order to remove from box. If necessary, the individual tubes can be cleaned out by using compressed air.Care must be taken not to damage the igniter.

4. INDUCER BLOWER ASSEMBLY

Inspect the pressure switch and drain tubing connections and inspect the blower/assembly for warpage, deterioration and carbon or other build-up. If

necessary, clean the accessible portions of the housing and blower with a damp cloth. Vacuum to remove any lint or dust from the motor assembly.

5. GASKETS/SEALING MATERIALS

Inspect all visible gaskets for signs of degradation or liquid seepage, especially any seals which were removed as part of the inspection. Replace any suspect gaskets.

C. HEAT EXCHANGER

Inspect for corrosion, pitting, warpage, deterioration, carbon build-up and loose gaskets in the flue pipe, burner box and accessible areas of the heat exchanger.

1. CLEANING THE COIL AIR SIDE

a. Remove the blower from the blower compartment. In order to remove the blower, it will first be necessary to disconnect the furnace from the outside power supply and disconnect the blower wire harness from the furnace at the blower pan quick connect.

b. Clean the coil with a vacuum cleaner by going through the blower pan opening being careful not to bend or damage any of the fins.

c. Once all components are cleaned, they must be re-installed to their factory produced state. Any seals or joints in the flue system which have been removed or loosened must be reconnected and sealed if necessary. Do this in accordance with the installation instructions.

⚠**CAUTION***: The inducer motor mounting plate gasket and the collector box gasket must be replaced.*

D. HOUSE AIR BLOWER

Check and clean the blower wheel, housing and compartment with a vacuum. Check the motor name plate and follow the motor manufacturers instructions for lubrication, if required.

IMPORTANT: Some motors are permanently lubricated **and should not be oiled.** See motor name plate for specific instructions.

E. RETURN AIR FILTER

The Return Air Filter(s): Provided with this unit is a permanent type filter. This filter(s) should be inspected and when dirty, cleaned or replaced, if necessary to

assure proper furnace operation. Follow the cleaning, removal and replacement procedure below.

FILTER MAINTENANCE PROCEDURE

The filter is located inside front door of the CMA/CMC. Remove filter retaining rod and remove dirty filter. Clean the filter by vacuuming, rinsing with tap water, hosing or dipping in an ordinary detergent solution. After cleaning, replace the completely dry filter and retain with retaining rod. If the filter has a mesh, the mesh side of the filter must be towards the furnace.

FILTER REPLACEMENT

Should the filter require replacement, replace with like size and type filter as originally supplied with furnace.

IMPORTANT: Remind homeowner of importance of monthly filter inspections during the heating season to ensure efficient and trouble-free operation of their furnace.

VIII. TROUBLESHOOTING

NOTICE: BEFORE TROUBLESHOOTING, FAMILIARIZE YOURSELF WITH THE START UP AND CHECKOUT PROCEDURE.

ALL INSTALLATION AND SERVICES MUST BE PERFORMED BY QUALIFIED HEATING CONTRACTORS.

To assist you in troubleshooting this furnace, it is equipped with an integrated ignition control with diagnostics. These diagnostics evaluate what control system has experienced a failure and will activate a flashing light on the control in different sequences to help pinpoint the failure which has occurred.

Note – check diagnostic code through view port prior to removing access door.

DIAGNOSTIC FEATURES

The 50A65 control used on this furnace continuously monitors its operation and the operation of the system. If a failure occurs, the LED light on the control will flash a code. **If the failure is internal to the control, the light will stay on continuously. In this case, the entire control should be replaced, as the control is not field-repairable.**

If the sensed failure is in the system (external to the control), the LED will flash in the following flash-pause sequences to indicate failure status (each flash will last approximately 0.25 seconds, and each pause will last approximately 2 seconds).

1 flash, then pause	system locked
2 flashes, then pause	pressure switch stuck closed
3 flashes, then pause	pressure switch stuck open
4 flashes, then pause	open high limit switch
6 flashes, then pause	115 volt AC power reversed
7 flashes, then pause	low flame sense signal
8 flashes, then pause	check ignitor or improper grounding

Continuous flashing (no pause)	Flame has been sensed when no flame should be present (no call for heat)

The LED will also flash once at power-up.

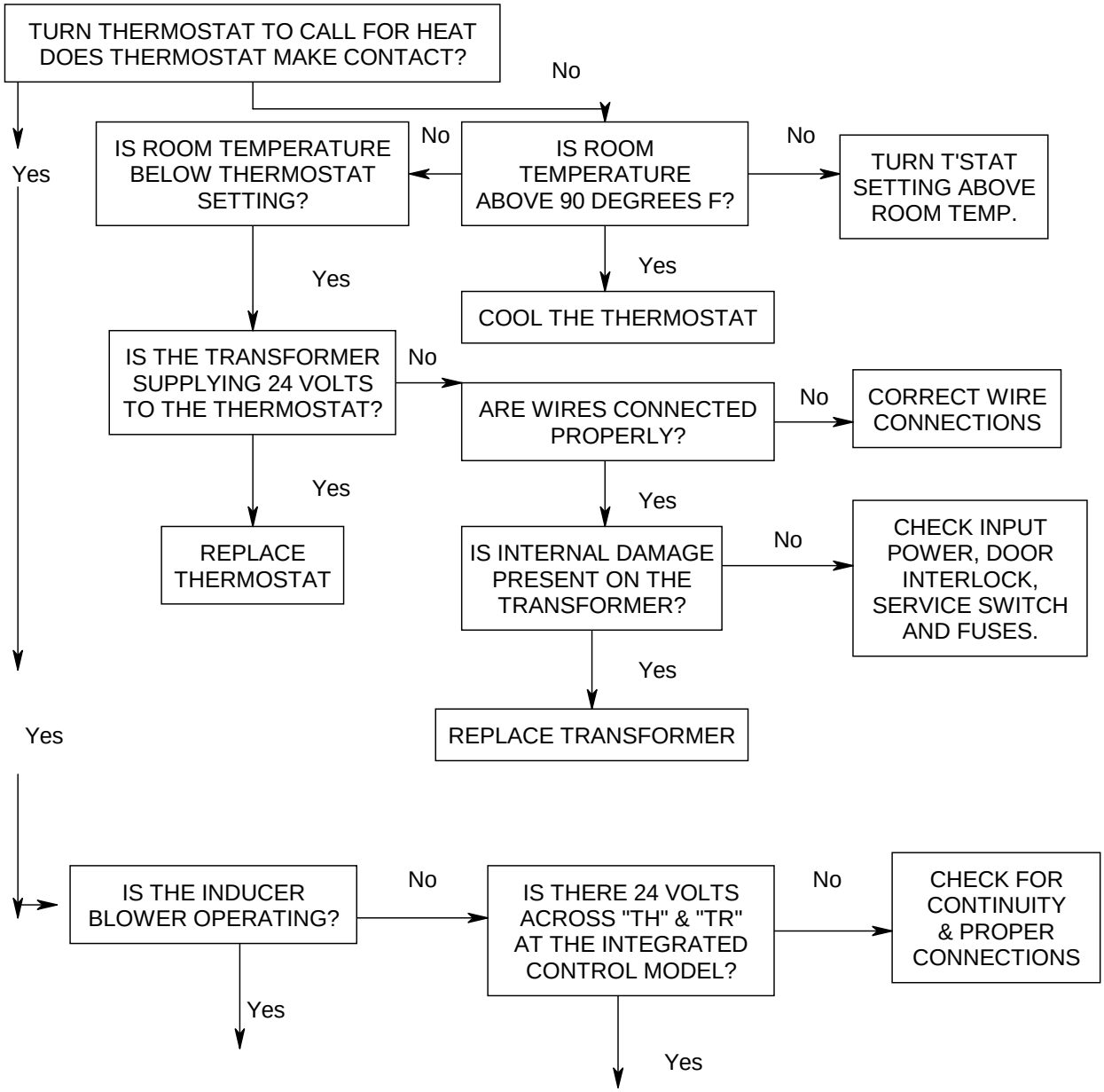
⚠**WARNING***: Power must be disconnected before servicing.*

All installations and services must be performed by qualified service personnel.

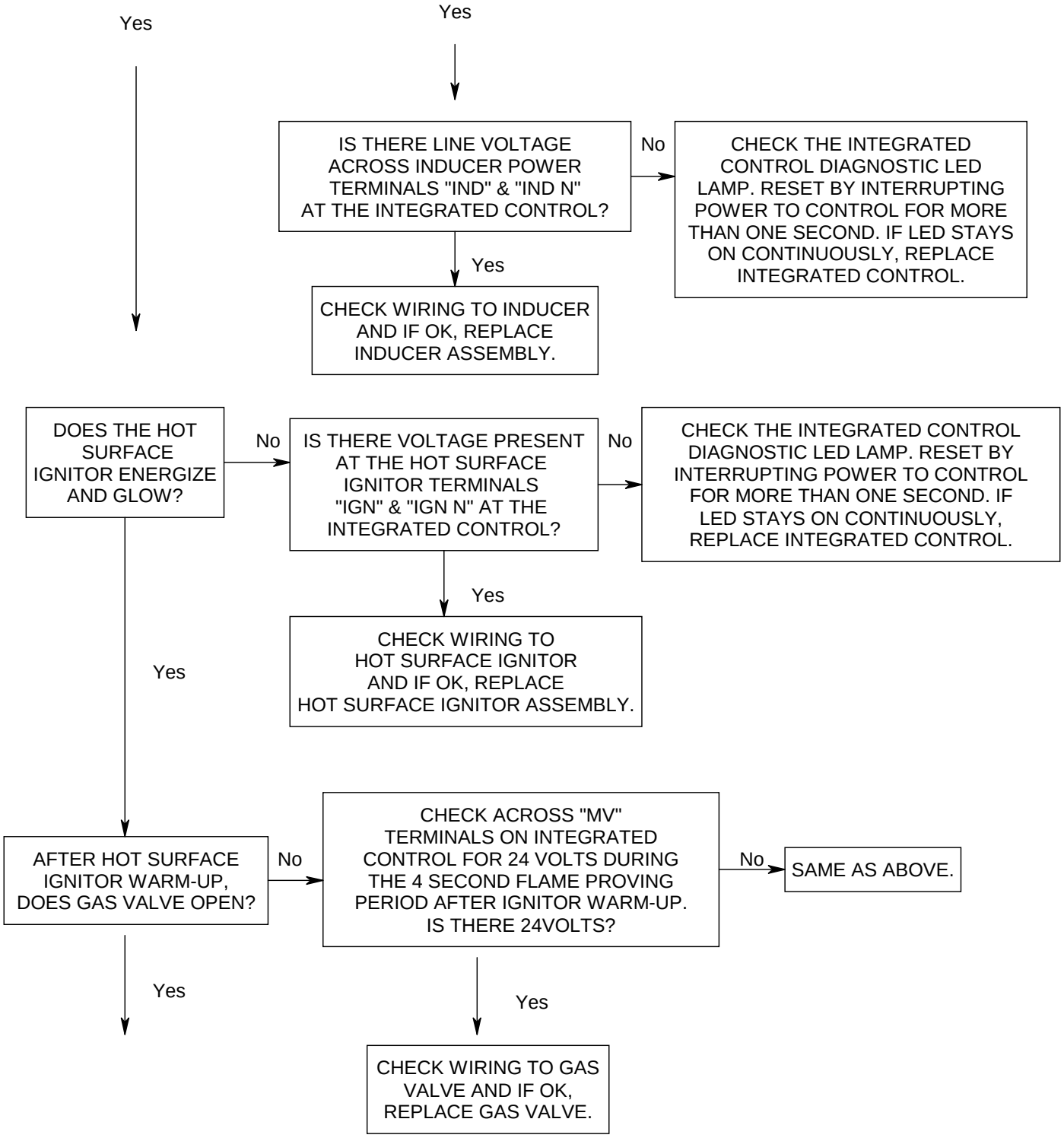
TROUBLESHOOTING GUIDE
THE SYSTEM IS STARTED BY SETTING THE THERMOSTAT TO CALL FOR HEAT. THE FOLLOWING SHOULD HELP ESTABLISH THE TYPE OF MALFUNCTION OR DEVIATION FROM THE NORMAL OPERATION.

TO USE THIS DIAGRAM, YOU JUST NEED TO FOLLOW THE INSTRUCTIONS IN THE BOXES.

NOTE: CHECK DIAGNOSTIC CODE THROUGH VIEW PORT PRIOR TO REMOVING ACCESS DOOR.



All installations and services must be performed by qualified service personnel.


Yes
Yes
IS THERE LINE VOLTAGE ACROSS INDUCER POWER TERMINALS "IND" & "IND N" AT THE INTEGRATED CONTROL?
No
CHECK THE INTEGRATED CONTROL DIAGNOSTIC LED LAMP. RESET BY INTERRUPTING POWER TO CONTROL FOR MORE THAN ONE SECOND. IF LED STAYS ON CONTINUOUSLY, REPLACE INTEGRATED CONTROL.
Yes
CHECK WIRING TO INDUCER AND IF OK, REPLACE INDUCER ASSEMBLY.
DOES THE HOT SURFACE IGNITOR ENERGIZE AND GLOW?
No
IS THERE VOLTAGE PRESENT AT THE HOT SURFACE IGNITOR TERMINALS "IGN" & "IGN N" AT THE INTEGRATED CONTROL?
No
CHECK THE INTEGRATED CONTROL DIAGNOSTIC LED LAMP. RESET BY INTERRUPTING POWER TO CONTROL FOR MORE THAN ONE SECOND. IF LED STAYS ON CONTINUOUSLY, REPLACE INTEGRATED CONTROL.
Yes
CHECK WIRING TO HOT SURFACE IGNITOR AND IF OK, REPLACE HOT SURFACE IGNITOR ASSEMBLY.
Yes
AFTER HOT SURFACE IGNITOR WARM-UP, DOES GAS VALVE OPEN?
No
CHECK ACROSS "MV" TERMINALS ON INTEGRATED CONTROL FOR 24 VOLTS DURING THE 4 SECOND FLAME PROVING PERIOD AFTER IGNITOR WARM-UP. IS THERE 24VOLTS?
No
SAME AS ABOVE.
Yes
Yes
CHECK WIRING TO GAS VALVE AND IF OK, REPLACE GAS VALVE.

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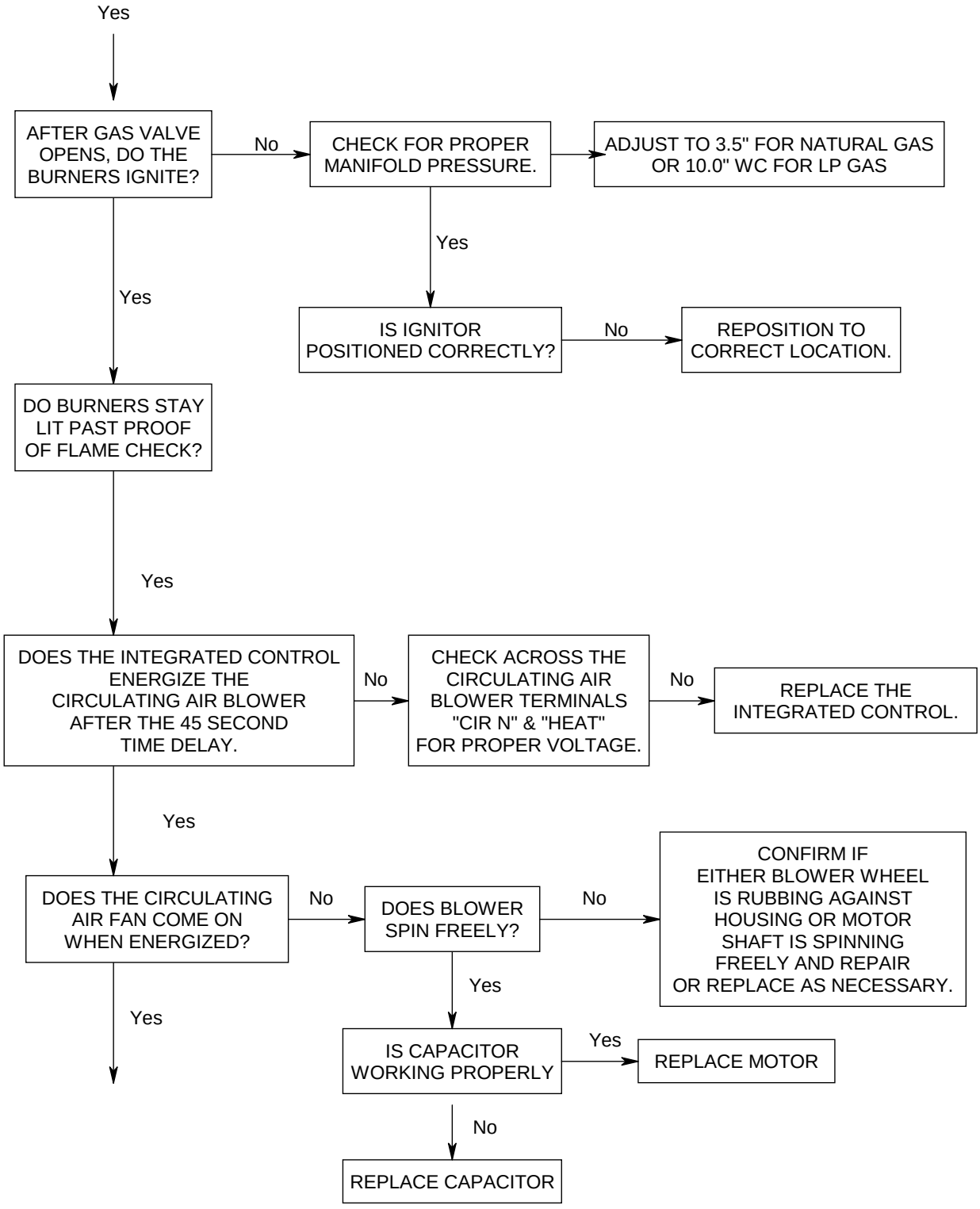
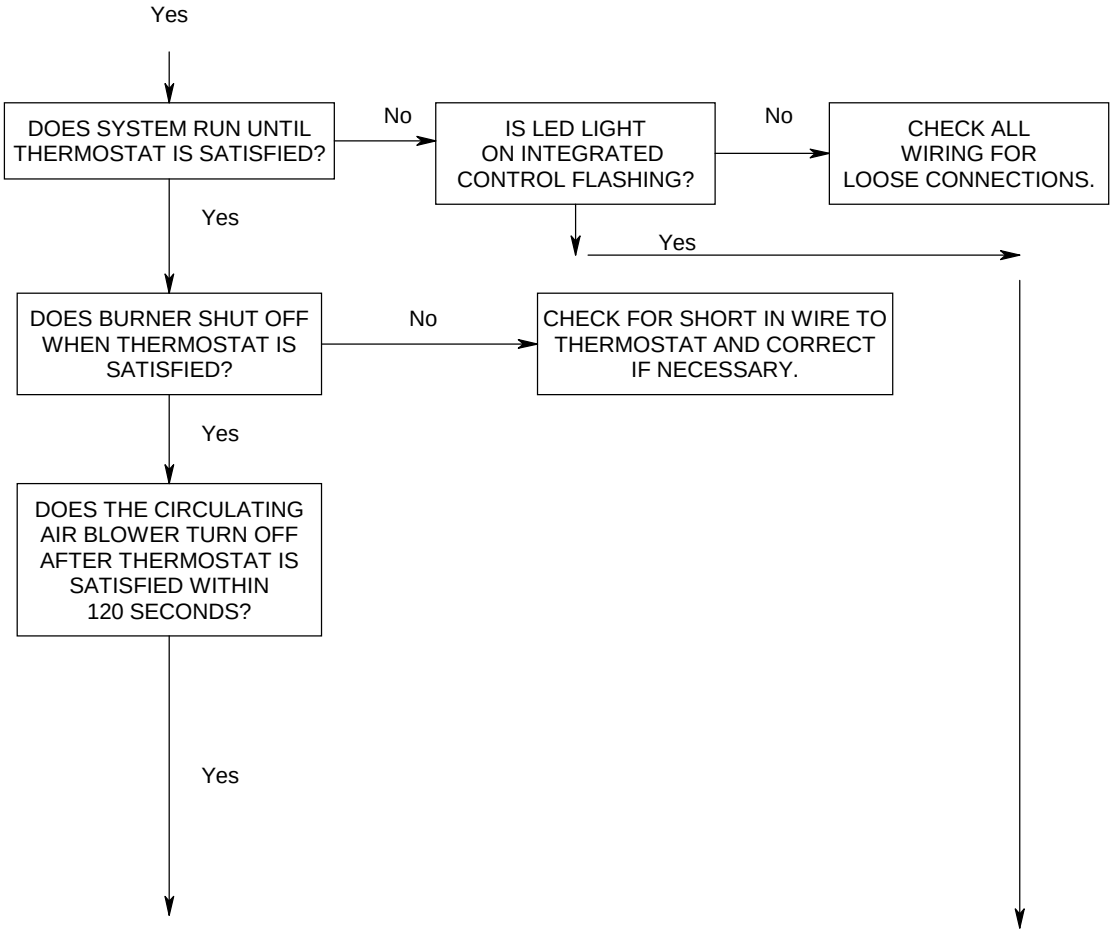

Yes
AFTER GAS VALVE OPENS, DO THE BURNERS IGNITE?
No
CHECK FOR PROPER MANIFOLD PRESSURE.
ADJUST TO 3.5" FOR NATURAL GAS OR 10.0" WC FOR LP GAS
Yes
Yes
IS IGNITOR POSITIONED CORRECTLY?
No
REPOSITION TO CORRECT LOCATION.
DO BURNERS STAY LIT PAST PROOF OF FLAME CHECK?
Yes
DOES THE INTEGRATED CONTROL ENERGIZE THE CIRCULATING AIR BLOWER AFTER THE 45 SECOND TIME DELAY.
No
CHECK ACROSS THE CIRCULATING AIR BLOWER TERMINALS "CIR N" & "HEAT" FOR PROPER VOLTAGE.
No
REPLACE THE INTEGRATED CONTROL.
Yes
DOES THE CIRCULATING AIR FAN COME ON WHEN ENERGIZED?
No
DOES BLOWER SPIN FREELY?
No
CONFIRM IF EITHER BLOWER WHEEL IS RUBBING AGAINST HOUSING OR MOTOR SHAFT IS SPINNING FREELY AND REPAIR OR REPLACE AS NECESSARY.
Yes
Yes
IS CAPACITOR WORKING PROPERLY
Yes
REPLACE MOTOR
No
REPLACE CAPACITOR

All installations and services must be performed by qualified service personnel.


Yes
DOES SYSTEM RUN UNTIL THERMOSTAT IS SATISFIED?
No
IS LED LIGHT ON INTEGRATED CONTROL FLASHING?
No
CHECK ALL WIRING FOR LOOSE CONNECTIONS.
Yes
Yes
DOES BURNER SHUT OFF WHEN THERMOSTAT IS SATISFIED?
No
CHECK FOR SHORT IN WIRE TO THERMOSTAT AND CORRECT IF NECESSARY.
Yes
DOES THE CIRCULATING AIR BLOWER TURN OFF AFTER THERMOSTAT IS SATISFIED WITHIN 120 SECONDS?
Yes

All installations and services must be performed by qualified service personnel.

Yes

Yes

IF LED LIGHT FLASHES:

1 FLASH, THEN PAUSE	SYSTEM LOCKOUT
2 FLASHES, THEN PAUSE	PRESSURE SWITCH STUCK CLOSED
3 FLASHES, THEN PAUSE	PRESSURE SWITCH STUCK OPEN
4 FLASHES, THEN PAUSE	OPEN LIMIT SWITCH OR ROLLOUT SWITCH
6 FLASHES, THEN PAUSE	115 VOLT AC POWER REVERSED
7 FLASHES, THEN PAUSE	LOW FLAME SENSE SIGNAL
8 FLASHES, THEN PAUSE	CHECK IGNITOR OR IMPROPER GROUNDING
CONTINUOUS FLASHING (NO PAUSE)	FLAME HAS BEEN SENSED WHEN NO FLAME SHOULD BE PRESENT (NO CALL FOR HEAT) CHECK COMPLETE SYSTEM OUT.

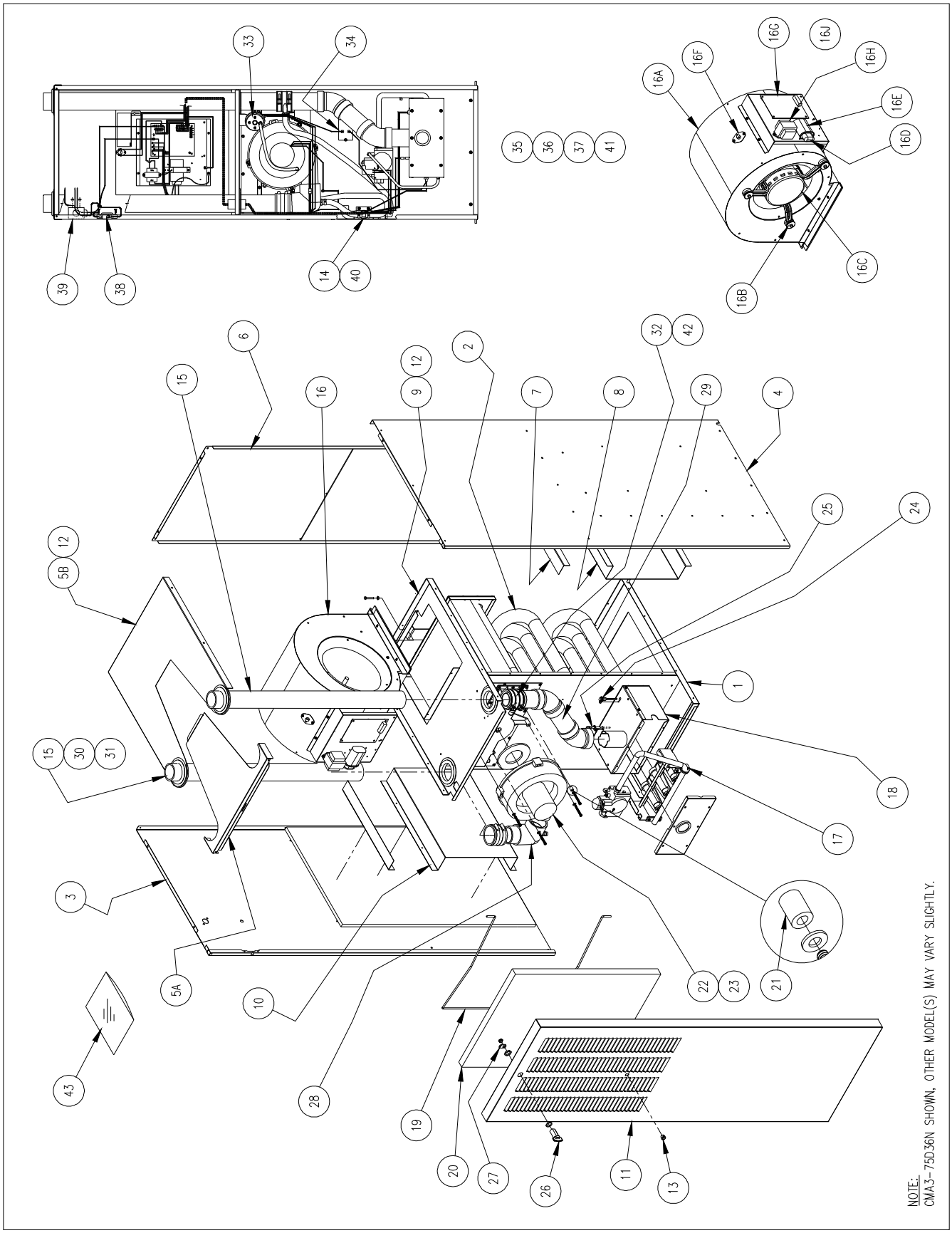
THE LED WILL ALSO FLASH ONCE AT POWER-UP.

LED LIGHT STAYS ON CONTINUOUSLY,
COMPLETE FAILURE - REPLACE
INTEGRATED CONTROL.

TROUBLESHOOTING COMPLETE.

All installations and services must be performed by qualified service personnel.

APPENDIX – A REPLACEMENT PARTS

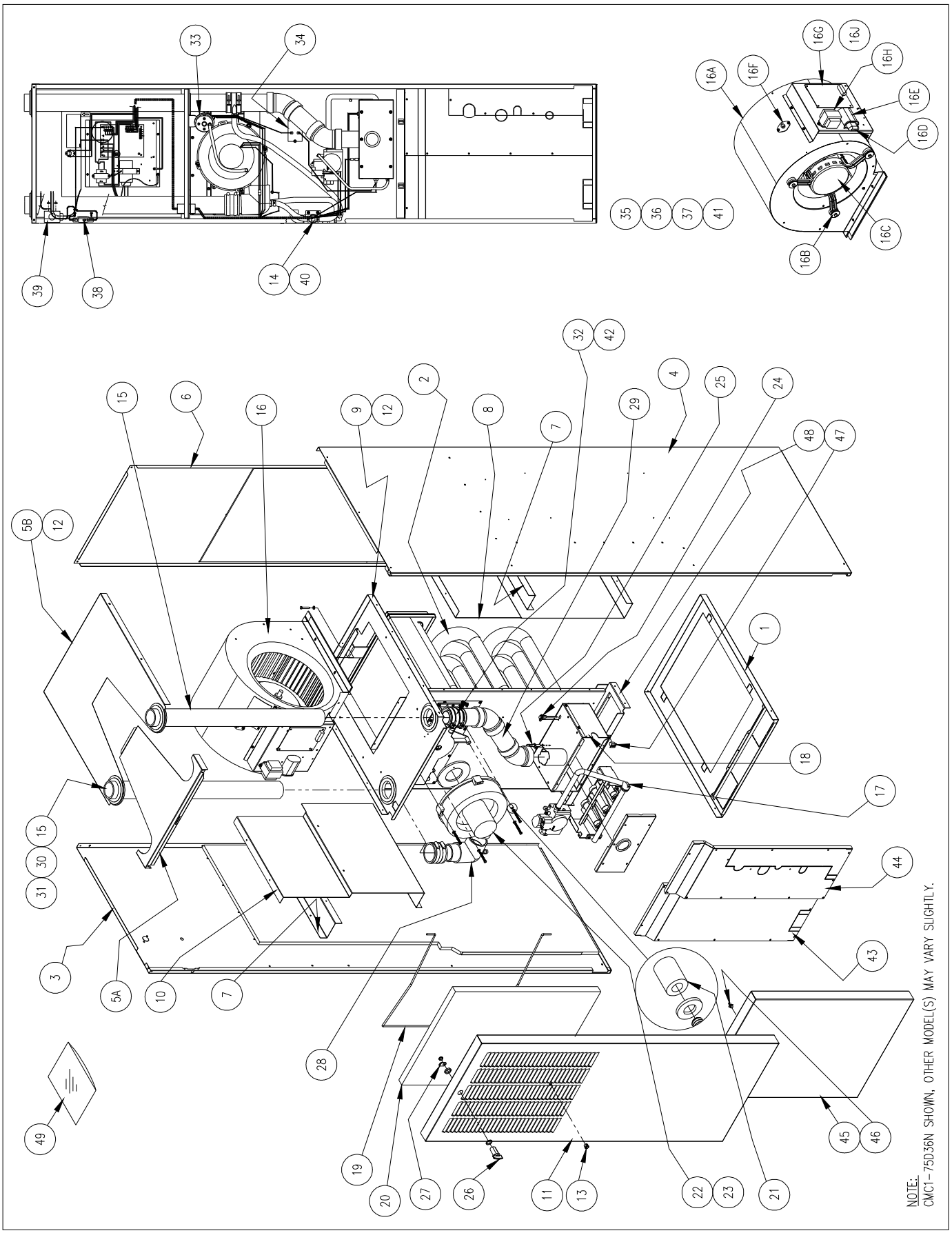


All installations and services must be performed by qualified service personnel.

ITEM	PARTS DESCRIPTION / UNIT	CMA3-50D36N PART NO.	CMA3-50D36N QTY.	CMA3-75D36N PART NO.	CMA3-75D36N QTY.
1	BASE	28188	1	28188	1
2	HEAT EXCHANGER	39166	1	39167	1
3	SIDE CASING, LEFT	618976-6	1	618976-6	1
4	SIDE CASING, RIGHT	618977-6	1	618977-6	1
5A	TOP, FRONT	619170-7	1	619170-7	1
5B	TOP, REAR	619171-7	1	619171-7	1
6	CASING, REAR	618978-6	1	618978-6	1
7	BLOCK OFF, COIL	–	–	18958	2
8	BAFFLE, AIR SIDE	18980	1	18935	2
9	BLOWER PAN	18975	1	18975	1
10	BAFFLE, AIR SIDE, LEFT	18979	1	–	–
11	FRONT DOOR	618929-1	1	618929-1	1
12	GROMMET, VINYL 2500	350007	4	350007	4
13	WINDOW PLUG, CLEAR	350248	1	350248	1
14	TRAP ASSSEMBLY	320916	1	320916	1
15	VENT/INTAKE PIPE, 2" PVC	18950	2	18950	2
16	BLOWER ASSEMBLY	S00S4178	1	S00S4178	1
16A	BLOWER HOUSING w\ WHEEL	S00S4508	1	S00S4508	1
16B	MOTOR BRACKET ASSEMBLY	A0PS7670	1	A0PS7670	1
16C	MOTOR (350573)	A0PS7657	1	A0PS7657	1
16D	CAPACITOR BOOT	350036	1	350036	1
16E	CAPACITOR	350073	1	350073	1
16F	AUX LIMIT SWITCH	350891	1	350891	1
16G	INTEGRATED FAN CONTROL	350836	1	350836	1
16H	TRANSFORMER	350464	1	350464	1
16J	BLOWER HARNESS	350781	1	350781	1
17	BURNER DRAWER ASSEMBLY	S00S8219	1	S00S8216	1
17A	BURNER TUBE	380595	2	380595	3
17B	MANIFOLD	380726	1	380670	1
17C	ORIFICE	380600	2	380600	3
17D	GROMMET	360434	1	360434	1
17E	GAS VALVE	A0PS7744	1	A0PS7744	1
18	BURNER BOX ASSEMBLY	S00S8218	1	S00S8215	1
18A	LIMIT SWITCH (ROLL OUT)	350485	1	350485	1
18B	SIGHT GLASS GASKET	330135	1	330135	1
18C	SIGHT GLASS	615887	1	615887	1
18D	SILICONE SPONGE GASKET 1/2"	330141	1.9'	330141	2.4'
18E	SILICONE SPONGE GASKET 1"	330140	1.6'	330140	2.2'

ITEM	PARTS DESCRIPTION / UNIT	CMA3-50D36N PART NO.	CMA3-50D36N QTY.	CMA3-75D36N PART NO.	CMA3-75D36N QTY.
19	FILTER RETAINER ROD	14809	1	14809	1
20	FILTER	370192	1	370192	1
21	SPACER, NYLON 3/8 ODx 1/2 L	300373	1	300373	1
22	INDUCER	340330	1	340330	1
23	INDUCER GASKET	330137	1	330137	1
24	IGNITER	380650	1	380650	1
25	FLAME SENSOR	350759	1	350759	1
26	CAM LATCH ASSEMBLY	320904	1	320904	1
27	CAM	320905	1	320905	1
28	VENT/DRAIN ELBOW ASSEMBLY	320903	1	320903	1
29	COMBUSTION AIR INTAKE ASS'Y	320924	1	320924	1
30	RADIATOR HOSE	410017	1	410017	1
31	HOSE CLAMP	300276	2	300276	2
32	DRAIN FITTING	320913	1	320913	1
33	PRESSURE SWITCH	A0PS7520	1	A0PS7520	1
34	LIMIT SWITCH	350495	1	350817	1
35	VESTIBULE WIRE HARNESS	350195	1	350195	1
36	SUPPLY WIRE HARNESS	350893	1	350893	1
37	GROUND WIRE HARNESS	350892	1	350892	1
38	DOOR SWITCH	350262	1	350262	1
39	J-BOX	350024	1	350024	1
40	TRAP MTG BRACKET	19053	1	19053	1
41	TUBING ASSEMBLY	S00S4185	1	S00S4185	1
42	FITTING, NYLON INSERT	300371	1	300371	1
43	PARTS PACKAGE	S00S4248	1	S00S4249	1
43A	J-BOX COVER	350020	1	350020	1
43B	RADIATOR HOSE	410017	2	410017	2
43C	HOSE CLAMP	300276	4	300276	4
43D	CPVC X PVC ADAPTER	320833	1	320833	1
43E	LP CONVERSION KIT	A0PS7741	1	A0PS7742	1

All installations and services must be performed by qualified service personnel.



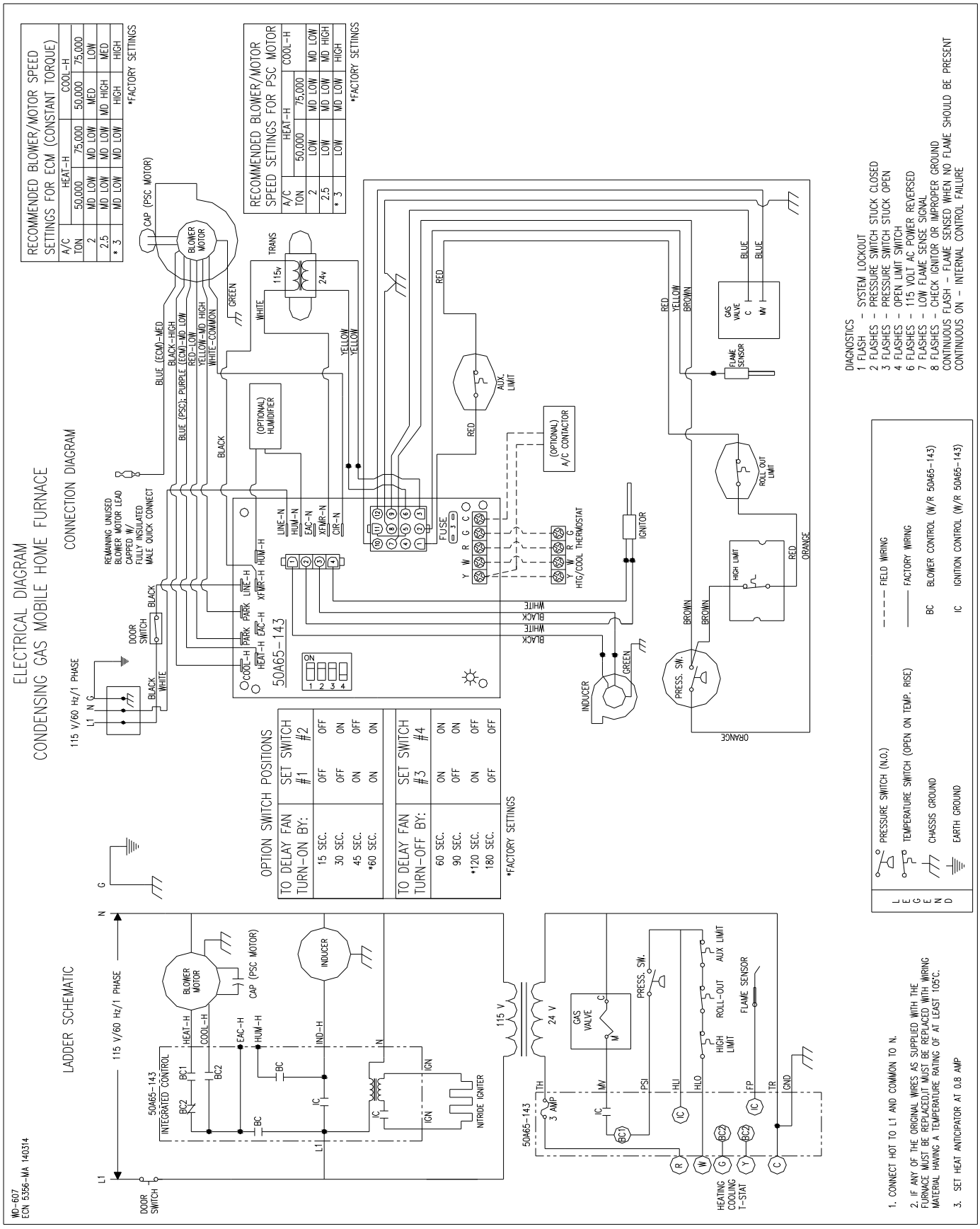
All installations and services must be performed by qualified service personnel.

ITEM	PARTS DESCRIPTION / UNIT	CMC1-50D36N		CMC1-75D36N		CMC1-50DV3N		CMC1-75DV3N	
		PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.
1	BASE	19108	1	19108	1	19108	1	19108	1
2	HEAT EXCHANGER	39122	1	39123	1	39122	1	39123	1
3	SIDE CASING, LEFT	629128-6	1	629128-6	1	629128-6E	1	629128-6E	1
4	SIDE CASING, RIGHT	629129-6	1	629129-6	1	629129-6E	1	629129-6E	1
5A	TOP, FRONT	619131-7	1	619131-7	1	619131-7	1	619131-7	1
5B	TOP, REAR	619172-7	1	619172-7	1	619172-7	1	619172-7	1
6	CASING, REAR	619130-6	1	619130-6	1	619130-6	1	619130-6	1
7	BAFFLE STAND-OFF	–	–	19118	2	–	–	19118	2
8	BAFFLE, AIR SIDE, RIGHT	19117	1	19173	1	19117	1	19173	1
9	BLOWER PAN	19109	1	19109	1	19109	1	19109	1
10	BAFFLE, AIR SIDE, LEFT	19116	1	19119	1	19116	1	19119	1
11	FRONT DOOR	619126-7	1	619126-7	1	619126-7	1	619126-7	1
12	GROMMET, VINYL 2500	350007	4	350007	4	350007	4	350007	4
13	WINDOW PLUG, CLEAR	350276	1	350276	1	350276	1	350276	1
14	TRAP ASSSEMBLY	320916	1	320916	1	320916	1	320916	1
15	VENT/INTAKE PIPE, 2" PVC	19121	2	19121	2	19121	2	19121	2
16	BLOWER ASSEMBLY	S00S4178	1	S00S4178	1	S00S4194	1	S00S4195	1
16A	BLOWER HOUSING w\ WHEEL	S00S4508	1	S00S4508	1	S00S4508	1	S00S4508	1
16B	MOTOR BRACKET ASSEMBLY	AOPS7670	1	AOPS7670	1	AOPS7670	1	AOPS7670	1
16C	MOTOR	AOPS7657	1	AOPS7657	1	350274	1	350275	1
16D	CAPACITOR BOOT	350036	1	350036	1	–	–	–	–
16E	CAPACITOR	350073	1	350073	1	–	–	–	–
16F	AUX LIMIT SWITCH	350891	1	350891	1	350891	1	350891	1
16G	INTEGRATED FAN CONTROL	350836	1	350836	1	350836	1	350836	1
16H	TRANSFORMER	350464	1	350464	1	350464	1	350464	1
16J	BLOWER HARNESS	350781	1	350781	1	350781	1	350781	1
17	BURNER DRAWER ASSEMBLY	S00S8219	1	S00S8216	1	S00S8219	1	S00S8216	1
17A	BURNER TUBE	380595	2	380595	3	380595	2	380595	3
17B	MANIFOLD	380726	1	380670	1	380726	1	380670	1
17C	ORIFICE	380600	2	380600	3	380600	2	380600	3
17D	GROMMET	360434	1	360434	1	360434	1	360434	1
17E	GAS VALVE	AOPS7744	1	AOPS7744	1	AOPS7744	1	AOPS7744	1
18	BURNER BOX ASSEMBLY	S00S8218	1	S00S8215	1	S00S8218	1	S00S8215	1
18A	LIMIT SWITCH (ROLL OUT)	350485	1	350485	1	350485	1	350485	1
18B	SIGHT GLASS GASKET	330135	1	330135	1	330135	1	330135	1
18C	SIGHT GLASS	615887	1	615887	1	615887	1	615887	1
18D	SILICONE SPONGE GASKET 1/2"	330141	1.9'	330141	2.4'	330141	1.9'	330141	2.4'
18E	SILICONE SPONGE GASKET 1"	330140	1.6'	330140	2.2'	330140	1.6'	330140	2.2'
19	FILTER RETAINER ROD	14809	1	14809	1	14809	1	14809	1
20	FILTER	370192	1	370192	1	370192	1	370192	1

ITEM	PARTS DESCRIPTION / UNIT	CMC1-50D36N		CMC1-75D36N		CMC1-50DV3N		CMC1-75DV3N	
		PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.
21	SPACER, NYLON 3/8 ODx 1/2 L	300373	1	300373	1	300373	1	300373	1
22	INDUCER	340330	1	340330	1	340330	1	340330	1
23	INDUCER GASKET	330137	1	330137	1	330137	1	330137	1
24	IGNITER	380650	1	380650	1	380650	1	380650	1
25	FLAME SENSOR	350759	1	350759	1	350759	1	350759	1
26	CAM LATCH ASSEMBLY	320904	1	320904	1	320904	1	320904	1
27	CAM	320905	1	320905	1	320905	1	320905	1
28	VENT/DRAIN ELBOW ASSEMBLY	320903	1	320903	1	320903	1	320903	1
29	COMBUSTION AIR INTAKE ASS'Y	320924	1	320924	1	320924	1	320924	1
30	RADIATOR HOSE	410017	1	410017	1	410017	1	410017	1
31	HOSE CLAMP	300276	2	300276	2	300276	2	300276	2
32	DRAIN FITTING	320913	1	320913	1	320913	1	320913	1
33	PRESSURE SWITCH	AOPS7520	1	AOPS7520	1	AOPS7520	1	AOPS7520	1
34	LIMIT SWITCH	350495	1	350817	1	350495	1	350817	1
35	VESTIBULE WIRE HARNESS	350195	1	350195	1	350195	1	350195	1
36	SUPPLY WIRE HARNESS	350893	1	350893	1	350893	1	350893	1
37	GROUND WIRE HARNESS	350892	1	350892	1	350892	1	350892	1
38	DOOR SWITCH	350262	1	350262	1	350262	1	350262	1
39	J-BOX	350024	1	350024	1	350024	1	350024	1
40	TRAP MTG BRACKET	19053	1	19053	1	19053	1	19053	1
41	TUBING ASSEMBLY	S00S4185	1	S00S4185	1	S00S4185	1	S00S4185	1
42	FITTING, NYLON INSERT	300371	1	300371	1	300371	1	300371	1
43	COIL ACCESS PANEL, LEFT	619111	1	619111	1	619111	1	619111	1
44	COIL ACCESS PANEL, RIGHT	619112	1	619112	1	619112	1	619112	1
45	DOOR, COIL ACCESS	619127-7	1	619127-7	1	619127-7	1	619127-7	1
46	STRIKE	320209	2	320209	2	320209	2	320209	2
47	LATCH	320208	2	320208	2	320208	2	320208	2
48	SEPARATOR PANEL, HORIZONTAL	19110	1	19110	1	19110	1	19110	1
49	PARTS PACKAGE	S00S4190	1	S00S4191	1	S00S4244	1	S00S4245	1
49A	J-BOX COVER	350020	1	350020	1	350020	1	350020	1
49B	RADIATOR HOSE	410017	2	410017	2	410017	2	410017	2
49C	HOSE CLAMP	300276	4	300276	4	300276	4	300276	4
49D	CPVC X PVC ADAPTER	320833	1	320833	1	320833	1	320833	1
49E	LP CONVERSION KIT	AOPS7741	1	AOPS7742	1	AOPS7741	1	AOPS7742	1
49F	GASKET, DRAIN KNOCK-OUT	330355	1	330355	1	330355	1	330355	1
49G	GROMMET, VINYL 3/8"	350040	1	350040	1	350040	1	350040	1
49H	GROMMET, VINYL 7/8"	350009	1	350009	1	350009	1	350009	1
49J	COIL TRIM PANEL	619113	1	619113	1	–	–	–	–
49K	BUSHING, UB-875	350750	1	350750	1	350750	1	350750	1
49L	BUSHING, SR34-2	350016	1	350016	1	350016	1	350016	1

All installations and services must be performed by qualified service personnel.

APPENDIX – B WIRING DIAGRAMS


ELECTRICAL DIAGRAM
CONDENSING GAS MOBILE HOME FURNACE
CONNECTION DIAGRAM
115 V/60 Hz/1 PHASE
RECOMMENDED BLOWER/MOTOR SPEED SETTINGS FOR ECM (CONSTANT TORQUE)
RECOMMENDED BLOWER/MOTOR SPEED SETTINGS FOR PSC MOTOR
*FACTORY SETTINGS
CAP (PSC MOTOR)
BLOWER MOTOR
TRANS
115v
24v
(OPTIONAL) HUMIDIFER
(OPTIONAL) A/C CONTACTOR
AUX. LIMIT
ROLL OUT LIMIT
HIGH LIMIT
FLAME SENSOR
GAS VALVE
IGNITOR
INDUCER
PRESS. SW.
DOOR SWITCH
FUSE
HTG/COOL THERMOSTAT
50A65-143
REMAINING UNUSED BLOWER MOTOR LEAD CAPPED W/ FULLY INSULATED MALE QUICK CONNECT
OPTION SWITCH POSITIONS
TO DELAY FAN TURN-ON BY:
SET SWITCH #1 #2
15 SEC. OFF OFF
30 SEC. OFF ON
45 SEC. ON OFF
*60 SEC. ON ON
TO DELAY FAN TURN-OFF BY:
SET SWITCH #3 #4
60 SEC. ON ON
90 SEC. OFF ON
*120 SEC. ON OFF
180 SEC. OFF OFF
*FACTORY SETTINGS
DIAGNOSTICS
1 FLASH – SYSTEM LOCKOUT
2 FLASHES – PRESSURE SWITCH STUCK CLOSED
3 FLASHES – PRESSURE SWITCH STUCK OPEN
4 FLASHES – OPEN LIMIT SWITCH
6 FLASHES – 115 VOLT AC POWER REVERSED
7 FLASHES – LOW FLAME SENSE SIGNAL
8 FLASHES – CHECK IGNITOR OR IMPROPER GROUND
CONTINUOUS FLASH – FLAME SENSED WHEN NO FLAME SHOULD BE PRESENT
CONTINUOUS ON – INTERNAL CONTROL FAILURE
LEGEND
PRESSURE SWITCH (N.O.)
TEMPERATURE SWITCH (OPEN ON TEMP. RISE)
CHASSIS GROUND
EARTH GROUND
FIELD WIRING
FACTORY WIRING
BC BLOWER CONTROL (W/R 50A65-143)
IC IGNITION CONTROL (W/R 50A65-143)
LADDER SCHEMATIC
115 V/60 Hz/1 PHASE
INTEGRATED CONTROL
NITRIDE IGNITER
HEATING COOLING T-STAT
1. CONNECT HOT TO L1 AND COMMON TO N.
2. IF ANY OF THE ORIGINAL WIRES AS SUPPLIED WITH THE FURNACE MUST BE REPLACED,IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105C.
3. SET HEAT ANTICIPATOR AT 0.8 AMP
WD-607
ECN 5356-MA 140314